

CR LAURENCE CO., INC

MIAMI-DADE TEST REPORT

SCOPE OF WORK

TAS 201, TAS 202, AND TAS 203 TESTING ON IW8000/SINGLE HUNG WINDOW (SMI)

REPORT NUMBER

J2605.01-303-18 R0

TEST DATE(S)

01/15/19 – 03/05/19

ISSUE DATE

03/14/19

RECORD RETENTION END DATE

03/05/29

MIAMI-DADE COUNTY NOTIFICATION NO.

ATI 18001

LABORATORY CERTIFICATION NO.

18-0524.05

PAGES

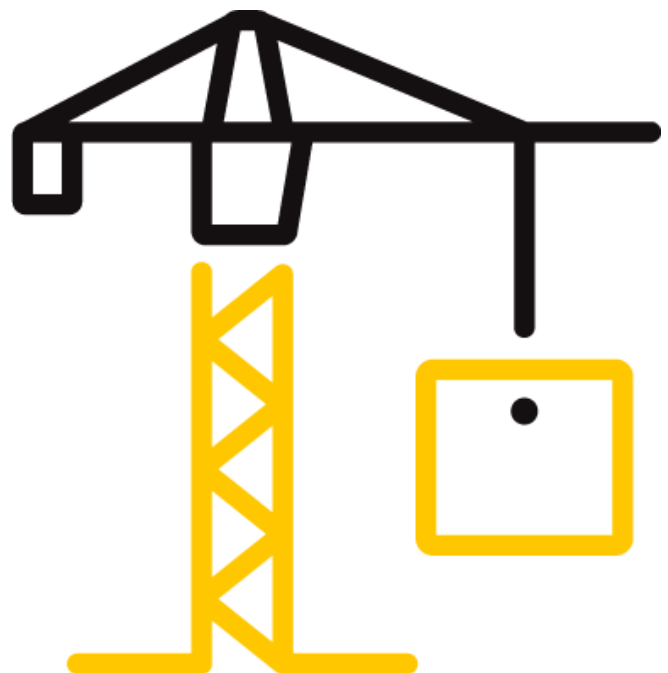
18

DOCUMENT CONTROL NUMBER

ATI 00651 (07/24/17)

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TEST REPORT FOR CR LAURENCE CO., INC

Report No.: J2605.01-303-18 R0

Date: 03/19/19

REPORT ISSUED TO

CR LAURENCE CO., INC.

2503 E. Vernon Ave.

Los Angeles, California 90058

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by CR Laurence CO., Inc. to perform TAS 201, TAS 202, and TAS 203 testing in accordance with Miami-Dade County requirements on their IW8000, single hung window (SMI). Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek B&C test facility in Lake Forest, CA. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

The specimens tested met the performance requirements set forth in the protocols.

Product Type: Single hung window (SMI)

Series/Model: IW8000

SPEC.	TEST PROTOCOL	DESIGN PRESSURE
1	TAS 202	+80 / -80 psf
2	TAS 201/203 (Small Missile)	+80 / -80 psf
3	TAS 201/203 (Small Missile)	+80 / -80 psf
4	TAS 201/203 (Small Missile)	+80 / -80 psf

For INTERTEK B&C:

COMPLETED BY:	Aaron Baker
TITLE:	Technician – Building & Construction
SIGNATURE:	
DATE:	03/19/19

REVIEWED BY:	Tyler Westerling, P.E.
TITLE:	Senior Project Engineer
SIGNATURE:	
DATE:	03/19/19

ctp:ab

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SECTION 3

TEST METHOD(S)

The specimens were evaluated in accordance with the following:

TAS 201-94, *Impact Test Procedures*

TAS 202-94, *Criteria for Testing Impact & Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure*

TAS 203-94, *Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of ten years from the test completion date.

Then specimen was installed into a Spruce-Pine-Fir wood test buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the door was sealed with 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" on center; 4" from corners at jambs and 12" on center.

SECTION 5

EQUIPMENT

Cannon: Constructed from steel piping utilizing compressed air to propel the missile

Missile: 2x4 Southern Pine

Timing Device: Electronic beam type

Cycling Mechanism: Computer controlled centrifugal blower with electronic pressure measuring device

Deflection Measuring Device: Linear transducers

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SECTION 6

LIST OF OFFICIAL OBSERVERS

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

SECTION 7

TEST SPECIMEN DESCRIPTION

Product Type: Single hung window (SMI)

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 inter layer -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 8
TEST RESULTS
Protocol TAS 202-94, Static Air Pressure
Test Date(s): 01/15/19 through 01/28/19

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

Test Specimen #1

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per TAS 202 at 6.24 psf (50 mph)	0.6 L/s/m ² (0.12 cfm/ft ²)	1.5 L/s/m ² (0.30 cfm/ft ²) max.	1
Water Penetration, per TAS 202 15% of Positive Design Pressure at 580 Pa (12.11 psf)	Pass	No leakage	
Forced Entry Resistance, Per ASTM F 588	Pass	No entry	

Note 1: Test Date 01/28/19 / Time: 8:00 AM (Air Note Only)

Test Specimen #1: Preload and Design Load per TAS 202

LOAD (psf)	INDICATOR LOCATION	DEFLECTION (in.)		PERMANENT SET (in.)	
		MEASURED	ALLOWED	MEASURED	ALLOWED
+60.15 50% of Test Pressure	1	0.06	N/A	0.02	N/A
	2	0.23	N/A	0.02	N/A
	3	0.08	N/A	0.02	N/A
+80.20 Design Pressure	1	0.08	N/A	0.01	N/A
	2	0.30	N/A	0.02	N/A
	3	0.10	N/A	0.01	N/A
-60.15 50% of Test Pressure	1	0.13	N/A	0.05	N/A
	2	0.29	N/A	0.06	N/A
	3	0.16	N/A	0.06	N/A
-80.20 Design Pressure	1	0.16	N/A	0.02	N/A
	2	0.36	N/A	0.02	N/A
	3	0.16	N/A	0.02	N/A

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Test Specimen #1: Structural Overload Load per TAS 202

LOAD (psf)	INDICATOR LOCATION	DEFLECTION (in.)		PERMANENT SET (in.)	
		MEASURED	ALLOWED	MEASURED	ALLOWED
+120.4 Test Pressure	1	0.17	N/A	0.04	N/A
	2	0.51	N/A	0.05	N/A
	3	0.20	N/A	0.04	N/A
-120.4 Test Pressure	1	0.32	N/A	0.05	N/A
	2	0.61	N/A	0.06	N/A
	3	0.31	N/A	0.05	N/A

Note 2: Positive and negative uniform static load test loads were held for 30 seconds.

Note 3: 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.

Note 4: See Sketch #1 for indicator locations. Deflection/permanent set reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

Protocol TAS 201-94, Small Missile Impact Procedures
Test Date(s): 01/28/19 through 01/28/19

The temperature during testing was 22°C (72°F). The results are tabulated as follows:

Test Specimen #2

IMPACT #	MISSILE WEIGHT (gram)	MISSILE LENGTH (in.)	MISSILE VELOCITY (ft./sec.)
Bottom left corner of sash	2	N/A	129.8
Top left corner of sash	2	N/A	129.5
Right side of sash midspan	2	N/A	130.0

Test Specimen #3

IMPACT #	MISSILE WEIGHT (gram)	MISSILE LENGTH (in.)	MISSILE VELOCITY (ft./sec.)
Bottom right corner of sash	2	N/A	129.5
Top right corner of sash	2	N/A	129.5
Left side of sash midspan	2	N/A	129.7

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Test Specimen #4

IMPACT #	MISSILE WEIGHT (gram)	MISSILE LENGTH (in.)	MISSILE VELOCITY (ft./sec.)
Center of interlock	2	N/A	129.5
Center of sash	2	N/A	129.6
Center of sill	2	N/A	130.1

Note 5: See Sketch #1 for impact locations.

Protocol TAS 203-94, Cyclic Wind Pressure Loading
Test Date(s): 02/01/19 through 03/05/19

The temperature during testing was 21°C (70°F). The results are tabulated as follows:

Test Specimen #2: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE			
+80.0 / -80.0 psf	1	2	3	4
POSITIVE PRESSURE RANGE (psf)	16.0 – 40.0	0 – 48.0	40.0 – 64.0	24.0 – 80.0
AVERAGE CYCLE TIME (sec.)	2.29	3.46	3.40	3.61
NUMBER OF CYCLES	3500	300	600	100
	5	6	7	8
NEGATIVE PRESSURE RANGE (psf)	24.0 – 80.0	40.0 – 64.0	0 – 48.0	16.0 – 40.0
AVERAGE CYCLE TIME (sec.)	2.87	3.38	3.51	3.03
NUMBER OF CYCLES	50	1050	50	3350

Test Specimen #2: Positive Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)
At right jamb of interlock	0.11	0.01
Mid span of sill	0.14	0.01

Test Specimen #2: Negative Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)
At right jamb of interlock	0.25	0.07
Mid span of sill	0.32	0.06

Note 6: See Sketch #1 for indicator locations.

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Test Specimen #3: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE			
+80.0 / -80.0 psf	1	2	3	4
POSITIVE PRESSURE RANGE (psf)	16.0 – 40.0	0 – 48.0	40.0 – 64.0	24.0 – 80.0
AVERAGE CYCLE TIME (sec.)	2.53	3.68	2.93	3.90
NUMBER OF CYCLES	3500	300	600	100
	5	6	7	8
NEGATIVE PRESSURE RANGE (psf)	24.0 – 80.0	40.0 – 64.0	0 – 48.0	16.0 – 40.0
AVERAGE CYCLE TIME (sec.)	4.23	3.36	3.49	2.87
NUMBER OF CYCLES	50	1050	50	3350

Test Specimen #3: Positive Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)
Center of interlock	0.33	0.00
Right sill	0.09	0.00

Test Specimen #3: Negative Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)
Center of interlock	0.51	0.08
Right sill	0.41	0.00

Note 7: See Sketch #1 for indicator locations.

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Test Specimen #4: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE			
+80.0 / -80.0 psf	1	2	3	4
POSITIVE PRESSURE RANGE (psf)	16.0 – 40.0	0 – 48.0	40.0 – 64.0	24.0 – 80.0
AVERAGE CYCLE TIME (sec.)	2.80	3.23	3.70	3.65
NUMBER OF CYCLES	3500	300	600	100
	5	6	7	8
NEGATIVE PRESSURE RANGE (psf)	24.0 – 80.0	40.0 – 64.0	0 – 48.0	16.0 – 40.0
AVERAGE CYCLE TIME (sec.)	3.74	3.47	3.73	2.80
NUMBER OF CYCLES	50	1050	50	3350

Test Specimen #4: Positive Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)
Center of interlock	0.28	0.01
Right sill at latch	0.08	0.00

Test Specimen #4: Negative Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)
Center of interlock	0.35	0.03
Right sill at latch	0.11	0.01

Note 8: See Sketch #1 for indicator locations.

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SECTION 9

CONCLUSIONS

The small missiles impacted each intended target. Each impact location was carefully inspected. No signs of penetration, rupture, or opening after the small missile impact test were observed; as such, each test specimen satisfies the small missile requirements of TAS 201. Upon completion of testing, specimens tested for TAS 201-94 met the requirements of Section 1626 of the Florida Building Code, Building.

AND

No signs of failure were observed in any area of the test specimen during the TAS 202 testing; as such, the test specimen satisfies the requirements of TAS 202. Upon completion of testing, specimens tested for TAS 202-94 met the requirements of Section 1620 of the Florida Building Code, Building.

AND

No signs of failure were observed in any area of the test specimens during the cyclic load test; as such, the test specimens satisfy the cyclic load requirements of TAS 203. Upon completion of testing, specimens tested for TAS 203-94 met the requirements of Section 1626 of the Florida Building Code, Building.

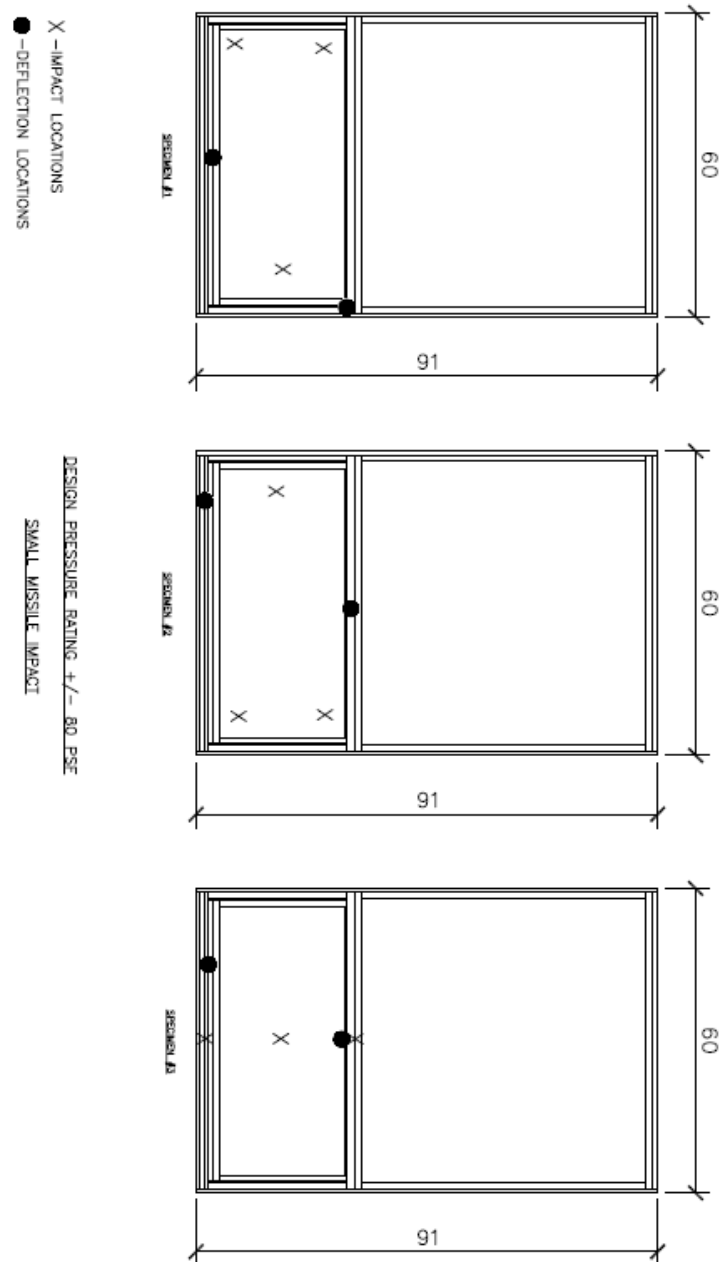
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SECTION 10

SKETCH



Sketch No. 1

TAS 202 Indicator Locations/TAS 201 Impact Locations/TAS 203 Indicator Locations



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SECTION 11

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.



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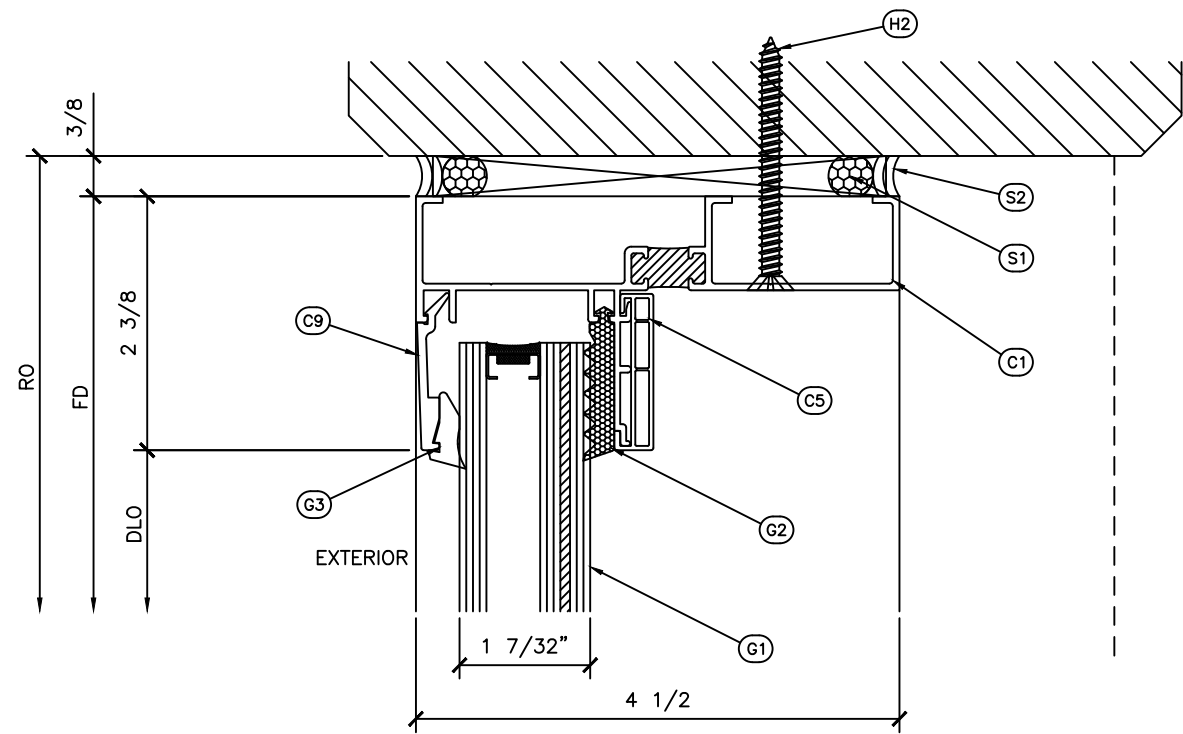
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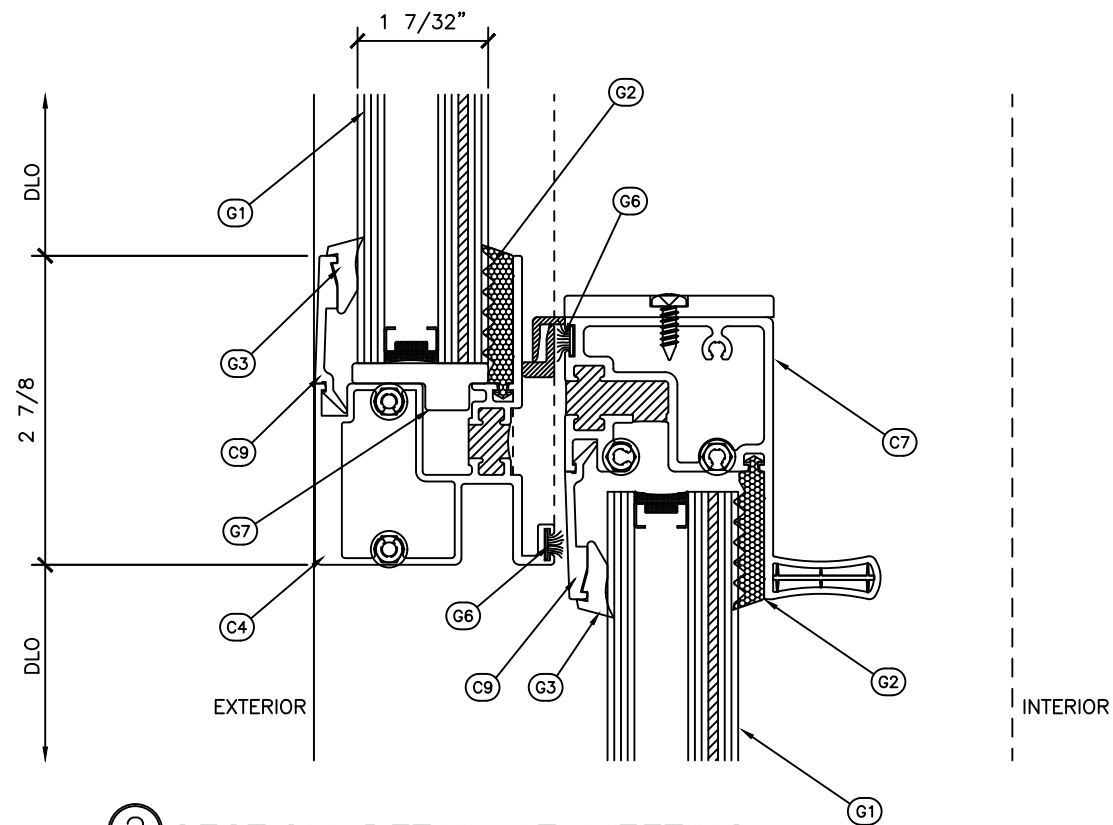
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1 SECTION DETAIL AT HEAD

ARCH REF: N/A

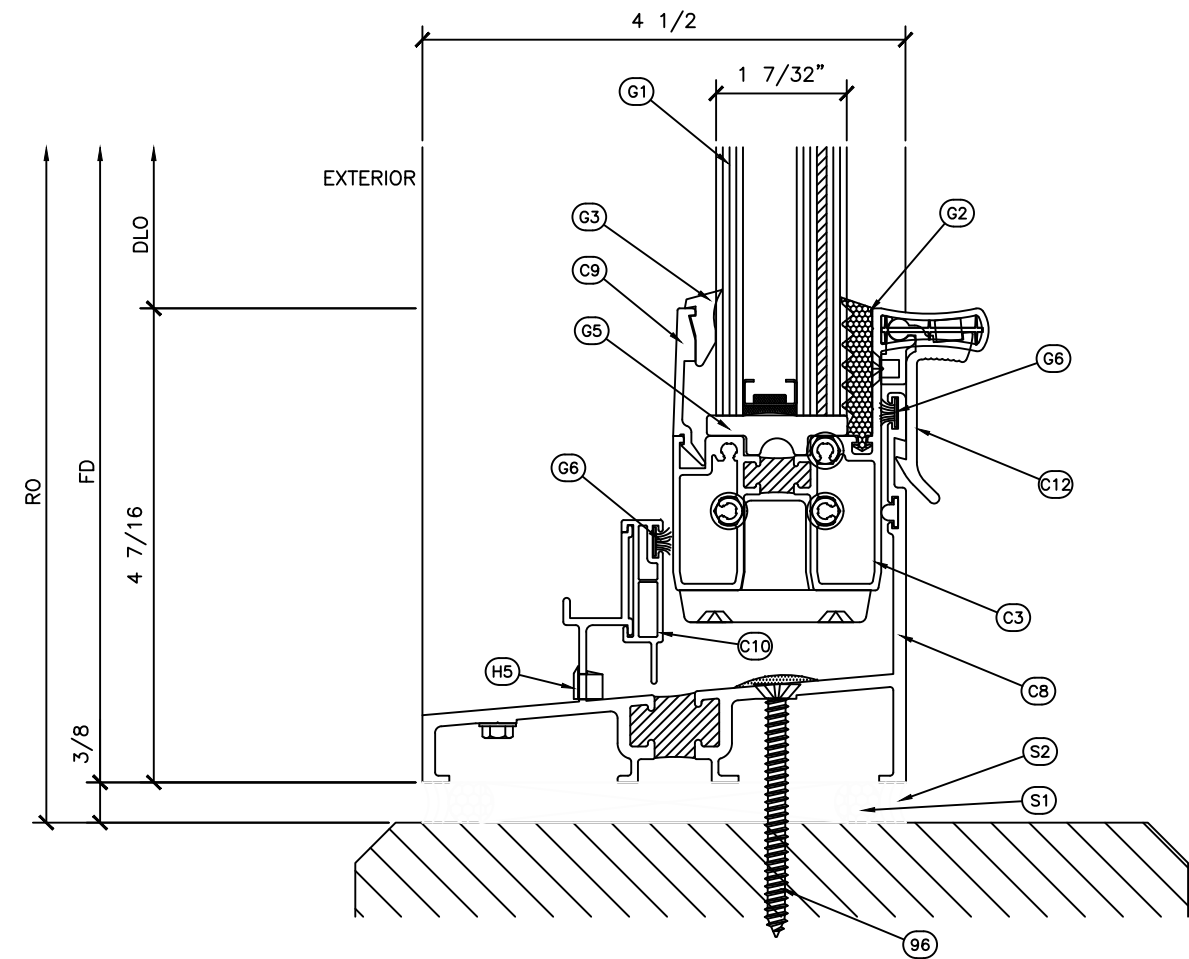
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2 SECTION DETAIL AT MEETING

ARCH REF: N/A

1'-0"=1'-0"



3 SECTION DETAIL AT SILL

ARCH REF: N/A

1'-0"=1'-0"

REVISIONS



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SERIES IW8000
HURRICANE RESISTANT
SINGLE HUNG WINDOW

Job Name:

Glazing Contractor:

DATE: 01.02.2018

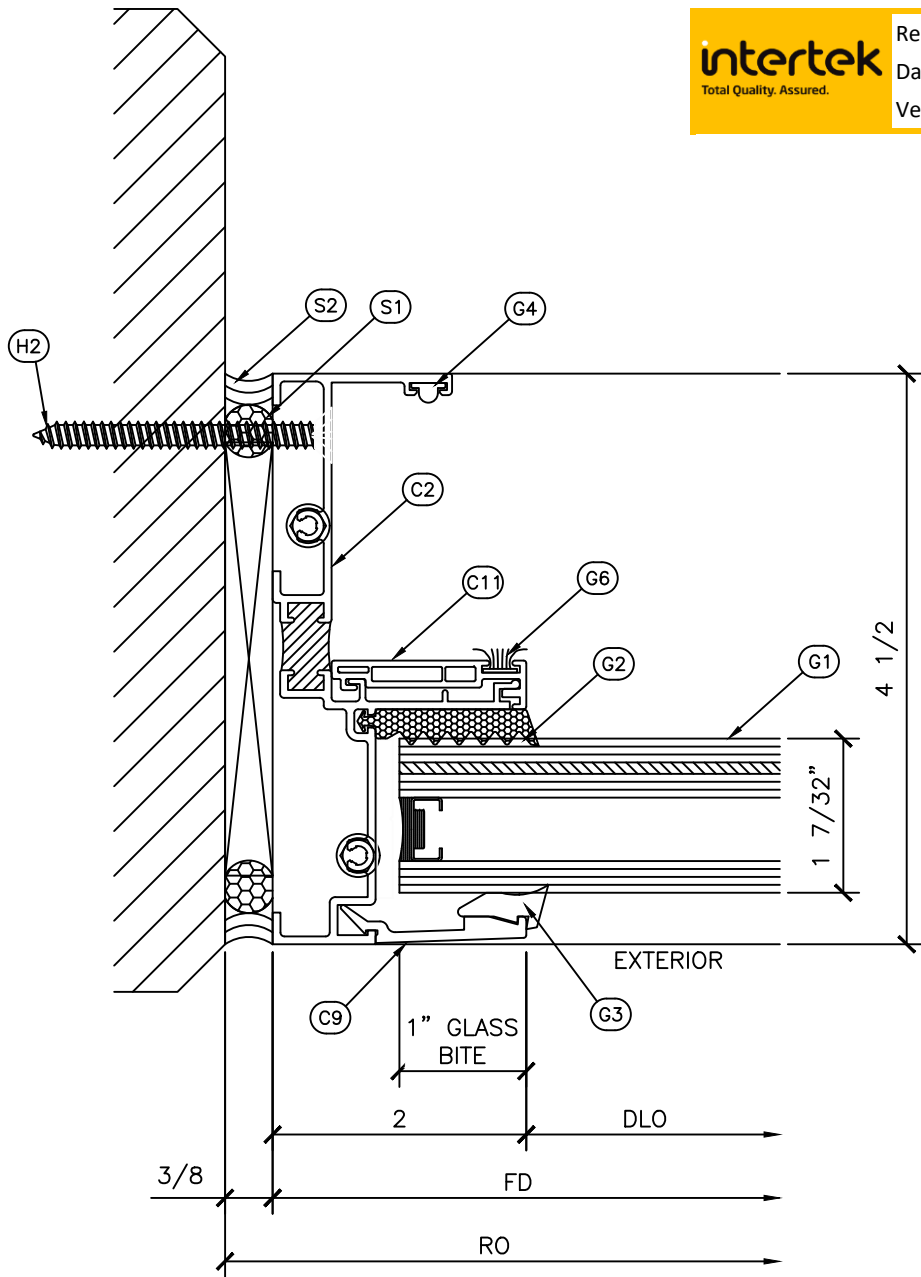
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SCALE: AS SHOWN

JOB #: PTC464017

SHT 2 OF 3



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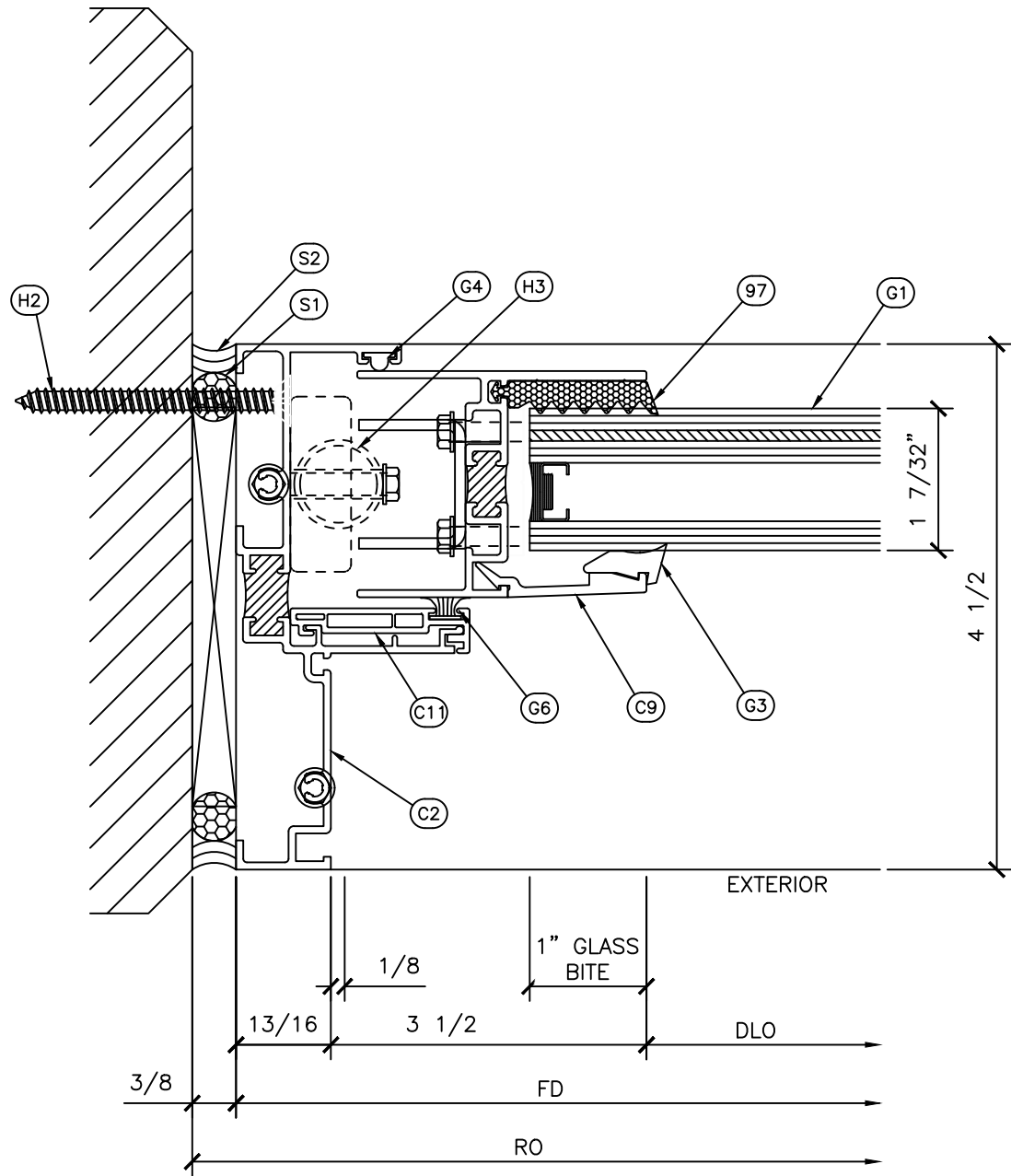
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Date:

03/19/19

Verified by:

④ SECTION DETAIL AT JAMB
ARCH REF: N/A
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⑤ SECTION DETAIL AT JAMB
ARCH REF: N/A
1'-0"=1'-0"

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SERIES IW8000
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SINGLE HUNG WINDOW

Glazing Contractor:

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SECTION 12

REVISION LOG

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