

INTERNATIONAL WINDOW TEST REPORT

SCOPE OF WORK

AAMA/WDMA/CSA 101/I.S.2/A440-11 TESTING ON:

5420 SINGLE HUNG WINDOW (TILT OUT)

REPORT NUMBER

H3344.01-301-44 R0

TEST DATE(S)

08/28/17 - 09/29/17

ISSUE DATE

10/25/17

RECORD RETENTION END DATE

09/29/22

PAGES

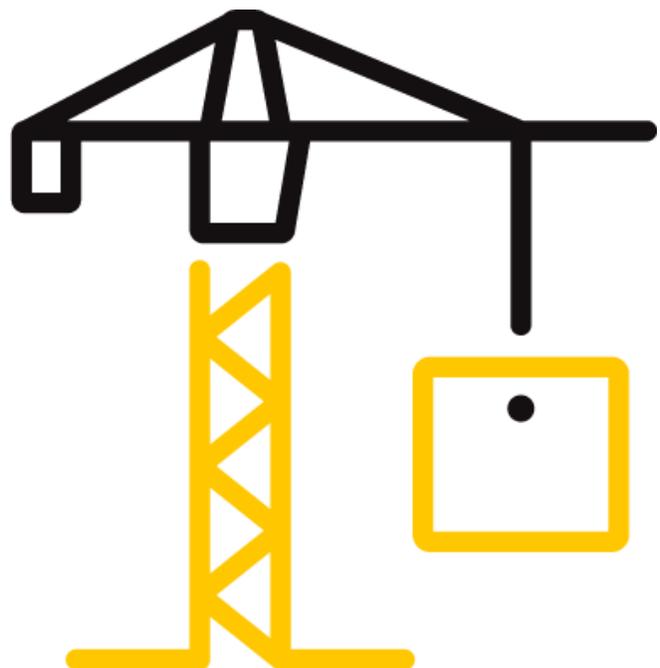
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TEST REPORT FOR INTERNATIONAL WINDOW

Report No.: H3344.01-301-44 R0

Date: 10/25/17

REPORT ISSUED TO

CUSTOMER FULL NAME

1551 E. Orangethorpe Ave.
Fullerton, CA 92831

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by International Window to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011*, and *CAWM 301* on their 5420 Single Hung Window (tilt-out). Results obtained are tested values and were secured by using the designated test method. Testing was conducted at an Intertek 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

| TITLE | RESULTS |
|--|--|
| AAMA/WDMA/CSA 101/I.S.2/A440-11 | Class LC – PG25: Size tested 1217 x 2134 (48 x 84 in) - Hung |
| Design Pressure | ±1200 Pa (±25.06 psf) |
| Air Infiltration | 1.5 L/s/m ² (0.29 cfm/ft ²) |
| Canadian Air Infiltration/Exfiltration Level | A2 |
| Water Penetration Resistance Test Pressure | 180 Pa (3.76 psf) |
| Forced Entry Resistance | ASTM F588 grade 10 & CAWM 301 |

For INTERTEK B&C:

| | | | |
|----------------------|-------------------------|---------------------|-------------------------|
| COMPLETED BY: | William Jay Ratliff | REVIEWED BY: | Tyler Westerling, P.E. |
| TITLE: | Technician - Structural | TITLE: | Senior Project Engineer |
| SIGNATURE: | | SIGNATURE: | |
| DATE: | 10/20/17 | DATE: | 10/20/17 |

WJR:ms

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SECTION 3

TEST METHODS

The specimens were evaluated in accordance with the following:

AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights

CAWM 301-90, Forced entry resistance testes for windows

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 five years from the test completion date.

The specimen was installed into a Douglass Fir wood buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter was sealed with sealant.

| LOCATION | ANCHOR DESCRIPTION | SPACING DETAILS |
|--------------|----------------------------------|--|
| Mounting fin | #10 x 3" Philips flat head screw | 16 inches on center through a 2x2 wood strip laid over the mounting fin. |

SECTION 5

EQUIPMENT

| Type | Manufacturer | Asset Number |
|------------------------|--------------|--|
| Control Panel | Intertek-ATI | 005724 |
| Micro MULE | Intertek-ATI | 005722 |
| Lab Conditions Monitor | Comet | 63304 |
| Deglazing Fixture | Intertek-ATI | 005264 |
| Load Cell – 1 k | Interface | 63196 |
| Load Cell – 3k | Interface | 65472 |
| Spray Rack – Lab | Intertek-ATI | 004047 |
| Spray Rack – Field | Intertek-ATI | 63331 |
| Force Gauge | Chatillion | 65528 |
| Linear Transducer | Celesco | 004486, 004488, 005281, 005282, 63346, 63349 |

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LIST OF OFFICIAL OBSERVERS

| NAME | COMPANY |
|---------------------|--------------|
| William Jay Ratliff | Intertek B&C |
| Erick Caldera | Intertek B&C |

SECTION 7

TEST SPECIMEN DESCRIPTION

Product Type: Single Hung (Tilt-Out)

Series/Model: 5420

| OVERALL AREA: | WIDTH | | HEIGHT | |
|--|-------------|---------|-------------|--------|
| | millimeters | inches | millimeters | inches |
| 2.6 m ² (28 ft ²) | | | | |
| Overall Size | 1217 | 48 | 2134 | 84 |
| Sash | 1126 | 44-5/16 | 1058 | 41-5/8 |
| Screen | 1121 | 44-1/8 | 1031 | 40-1/2 |

The following descriptions apply to all specimens.

Frame Construction:

| FRAME MEMBER | MATERIAL | DESCRIPTION |
|-----------------------|--------------|--|
| Head, Sill, Jamb | PVC | Extruded PVC, white. |
| Horizontal Mullion | PVC | Extruded PVC, white. |
| Fixed Sitrine Adapter | PVC | Extruded, white. |
| Jamb Vent Stop | PVC | Extruded PVC, white. |
| LOCATION | JOINERY TYPE | DETAIL |
| Frame Corners | Mitered | Fully welded. |
| Horizontal Mullion | Coped | Sealed and fastened through jambs with two #8 x 2-1/2" Phillips bulge head screws at each end. |
| Fixed Sitrine Adapter | Snap-fit | Sealed and snap fit into each jamb, then fastened into jambs with three #6 x 1-5/8" Phillips flat head screws. |
| Jamb Vent Stop | Snap-fit | Snapped into interior track at head. |

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Sash Construction:

| SASH MEMBER | MATERIAL | DESCRIPTION |
|-------------|--------------|---------------|
| Rails | PVC | Extruded. |
| Stiles | PVC | Extruded. |
| LOCATION | JOINERY TYPE | DETAIL |
| All Corners | Mitered | Fully welded. |

Reinforcement:

| DRAWING NUMBER | LOCATION | MATERIALS |
|----------------|---------------------------|------------------------|
| C-1500 | Interlock reinforcement | Aluminum, mill finish. |
| C-1506 | Bottom rail reinforcement | Aluminum, mill finish. |
| C-1504 | Stile reinforcement | Aluminum, mill finish. |
| C-1499 | Mullion reinforcement | Aluminum, mill finish. |

Weatherstripping:

| DESCRIPTION | QUANTITY | LOCATION |
|--------------------------------|----------|----------------------|
| .440 Poly Pile with Center Fin | 1 row | Mullion interlock. |
| Bulb Seal | 1 row | Bottom rail, bottom. |
| .310 Poly Pile with Center Fin | 1 row | Vent meeting rail. |
| .310 Poly Pile with Center Fin | 2 rows | Vent stiles. |

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" IG | Steel intercept | 1/8" clear annealed | 1/8" clear annealed | Exterior glazed onto 1/2" wide by 1/16" thick glazing tape and held in place by snap in glazing beads. |

| LOCATION | QUANTITY | DAYLIGHT OPENING | | GLASS BITE |
|------------|----------|------------------|-------------|------------|
| | | millimeters | inches | |
| Sash | 1 | 1034 x 967 | 40-3/8 x 38 | 1/2" |
| Fixed Lite | 1 | 1034 x 967 | 40-3/8 x 38 | 1/2" |

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Drainage:

| DRAINAGE METHOD | SIZE | QUANTITY | LOCATION |
|-----------------|-----------------------------|----------|-------------------------------------|
| Hole | 1/4" round | 2 | Sill, 1/4" from ends in jamb track. |
| Slot with Cover | 1-3/8 x 3/16 (effective) | 2 | Face of sill, 3-3/4" from ends. |

Hardware:

| DESCRIPTION | QUANTITY | LOCATION |
|--------------------------|----------|---|
| Tilt Latch | 2 | Meeting rail, each end. |
| Block and Tackle Balance | 2 | Each jamb. |
| Lock | 1 | Meeting rail, midspan. |
| Lock Keeper | 1 | Horizontal mullion, midspan. |
| Tilt Bat | 2 | Vent bottom rail, each end, fastened with two #6 x 3/4" tek screws. |

Screen Construction:

| FRAME MATERIAL | CORNER CONSTRUCTION | MESH TYPE | MESH ATTACHMENT METHOD |
|----------------------|---------------------|------------|------------------------|
| Roll Formed Aluminum | Corner key | Fiberglass | Hollow spline. |

SECTION 8 TEST RESULTS

The temperature during testing was 24°C (75°F). The results are tabulated as follows:

| TITLE OF TEST | RESULTS | ALLOWED | NOTE |
|--|---|--|------|
| Operating Force, per ASTM E2068 | Initiate Motion: 116 N (26 lbf) Maintain Motion: 100 N (23 lbf) Tilt Latches: 18 N (4 lbf) Locks: 13 N (3 lbf) | Report only 180 N (40.47 lbf) max 100 N (22.5 lbf) max 100 N (22.5 lbf) max | |
| Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf) | 1.4 L/s/m ² (0.28 cfm/ft ²) | 1.5 L/s/m ² (0.3 cfm/ft ²) max. | 1, 2 |

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| TITLE OF TEST | RESULTS | ALLOWED | NOTE |
|---|------------------------------------|--|---------|
| Water Penetration, per ASTM E547 at 180 Pa (3.76 psf) | Pass | No leakage | |
| Uniform Load Deflection, per ASTM E330 Deflections taken at vent stile +1200 Pa (+25.06 psf) -1200 Pa (-25.06 psf) | 16.5 mm (0.65") 1.2 mm (0.05") | Report only | 4, 5, 6 |
| Uniform Load Deflection, per ASTM E330 Deflections taken at meeting rail +1200 Pa (+25.06 psf) -1200 Pa (-25.06 psf) | 3.0 mm (0.12") 2.3 mm (0.09") | Report only | 4, 5, 6 |
| Uniform Load Structural, per ASTM E330 Permanent set taken at vent stile +1800 Pa (+37.59 psf) -1800 Pa (-37.59 psf) | 0.8 mm (0.03") <0.1 mm (<0.01") | 4.5 mm (0.18") max. 4.5 mm (0.18") max. | 5, 6 |
| Uniform Load Structural, per ASTM E330 Permanent set taken at meeting rail +1800 Pa (+37.59 psf) -1800 Pa (-37.59 psf) | <0.1 mm (<0.01") 0.3 mm (0.01") | 4.5 mm (0.18") max. 4.5 mm (0.18") max. | 5, 6 |
| Forced Entry Resistance, per ASTM F588, Type: A - Grade: 10 | Pass | No entry | |
| Thermoplastic Corner Weld | Pass | Meets as stated | |
| Deglazing, per ASTM E987 Operating direction, 320 N (70 lbf) Remaining direction, 230 N (50 lbf) | Pass Pass | Meets as stated Meets as stated | |

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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 08/28/17 / Time: 9:06 AM*

Note 3: *With and without insect screen.*

Note 4: *The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

Note 5: *Loads were held for 10 seconds.*

Note 6: *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 9 ALTERATIONS

No alterations were required.

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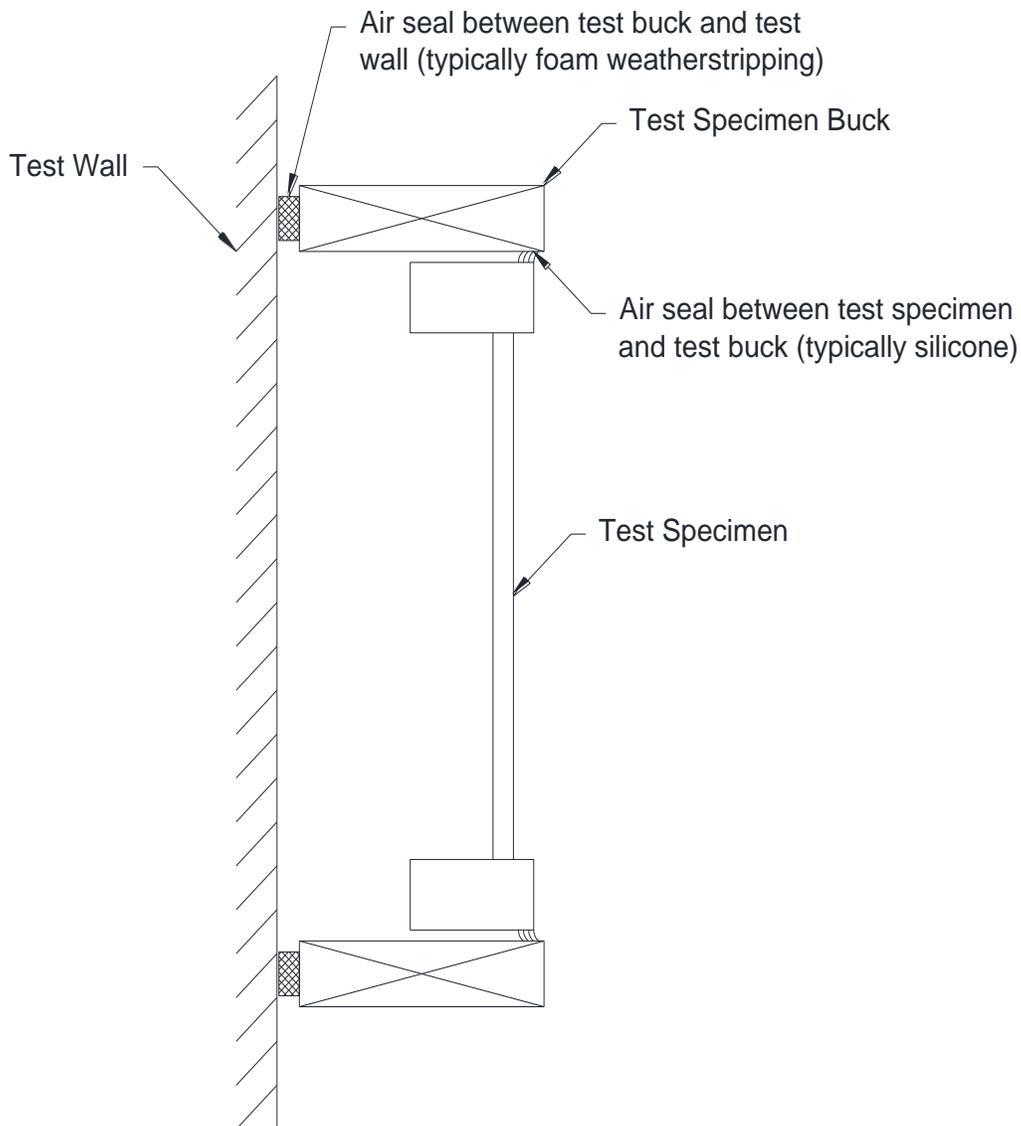
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SECTION 10

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.





Total Quality. Assured.

2524 E. Jensen Ave
Fresno, California 93706

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SECTION 11

CONCLUSION

The specimen tested successfully met the performance requirements for the following rating:

Class LC – PG25: Size tested 1217 x 2134 (48 x 84 in) - Hung



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SECTION 12 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.

Note: *Complete drawings packet on file with Intertek B&C.*



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SECTION 13

REVISION LOG

| REVISION # | DATE | PAGES | REVISION |
|------------|----------|-------|-----------------------|
| 0 | 10/25/17 | N/A | Original Report Issue |