OSHA FALL PROTECTION TEST REPORT

Rendered to:

VELUX America LLC

SERIES/MODEL: FS S06 2004
PRODUCT TYPE: Fixed Deck Mounted Skylight

Report No: 96238.02-109-44
Test Date: 01/06/10
Report Date: 01/09/18
Record Retention End Date: 01/06/14
OSHA FALL PROTECTION TEST REPORT

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VELUX America LLC
P.O. Box 5001
Greenwood, South Carolina 29648-5001

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Project Summary: Architectural Testing, Inc. was contracted by VELUX America Inc. to perform testing on Series/Model FS S06 2004, fixed deck mounted skylight. The test specimen description and results are reported herein. The test sample was provided by the client.

Test Specification: The test specimen was tested to assess compliance with Occupational Safety and Health Administration/U.S. Department of Labor Regulations (Standards- 29 CFR)-1910.23(e)(8). A 200 lbf weight, fabricated from a bag filled with sand, was placed on the center of the unit for a minimum of 60 seconds and then dropped from increasing heights above the skylight starting at 2’ until permanent visible damage was noted. All impact load drops were noted, and the resulting damage was recorded.

Evaluation Scope:

Intertek Building & Construction (B&C) was contracted by VELUX America LLC, 1418 Evans Pond Road on December 4, 2017 to evaluate the OSHA fall protection testing to the most recent referenced document. Occupational Safety and Health Administration (OSHA)/U.S. Department of Labor Regulations Standard 29 CFR §1910.29 – Fall protection systems and falling object protection-criteria and practices. Section 1910.29(e)(1) requires a cover to be capable of supporting without failure at least twice the maximum intended load that may be imposed on the cover at any one time.

Intertek Building & Construction (B&C) was contracted by VELUX America LLC, 1418 Evans Pond Road on December 4, 2017 to evaluate the Cal/OSHA fall protection testing to the most recent referenced document. California Code of Regulations, Title 8, Section 3212 §(b), which states, "covers shall be capable of safely supporting the greater of 400 lbs or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time."
Test Specimen Description:

**Series/Model:** FS S06 2004

**Product Type:** Fixed Deck Mounted Skylight

**Overall Size:** 44-3/4" wide by 46-1/4" long

**Fixed Daylight Opening Size:** 41-1/4" by 42-3/4"

**Overall Area:** 14.5 ft²

**Finish:** All aluminum and wood was coated.

**Frame Construction:** The frame was constructed of wood members with mortised corners, secured with glue and one 1-3/4" long nail per corner. A steel mounting flange was utilized around the exterior perimeter of the frame. The corners of the flange were mitered and welded. The flange was secured to the frame with 1" long galvanized nails, located 2-1/2" from each corner and spaced approximately 9" on center.

**Weatherstripping:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot; dual-fin hollow bulb gasket</td>
<td>1 Row</td>
<td>Top and sides of the frame</td>
</tr>
<tr>
<td>Custom single leaf rubber gasket</td>
<td>1 Row</td>
<td>Bottom of the frame</td>
</tr>
</tbody>
</table>

**Glazing Detail:** The skylight was glazed with 17.2 mm (11/16") thick insulating glass, constructed from a sheet of 3 mm (1/8") thick clear tempered glass outboard, a sheet of 5.8 mm (7/32") thick laminated glass inboard, and a stainless steel box spacer system. The laminated glass was constructed from two sheets of 2.5 mm (3/32") thick clear heat-strengthened glass and a 0.76 mm (0.030") thick PVB interlayer. The glass was exterior glazed against the EPDM frame gaskets and secured with roll-formed aluminum glazing profiles with silicone sealant against the glass. The glazing profiles were secured to the frame with #8 x 1-1/4" long pan head screws.

**Drainage:** Condensation weepage channels were utilized in the sill gasket.

**Hardware:** No hardware was utilized.

**Reinforcement:** No reinforcement was utilized.

**Installation:** The skylights were mounted on 2x8 Spruce-Pine-Fir wood bucks with nominal 1/2" thick plywood decking. The rough openings utilized double header and double rafter construction per the installation manual. The skylight was secured to the buck through the steel mounting flange with manufacturer supplied 1-1/4" long 1/8" diameter shank, 3/8" diameter head ring shank nails, located by pre-drilled holes 3" from each end and spaced about 9" on center. All test units were installed in accordance with the manufacturer's installation instructions.
**Test Results:** The results are tabulated as follows:

**OSHA Safety Drop Test**

<table>
<thead>
<tr>
<th>Test Method</th>
<th>Load Location</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 lbf at rest</td>
<td>Center of glass</td>
<td>No visible damage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See Note #1</td>
</tr>
<tr>
<td>400 lbf-ft (2’ drop height)</td>
<td>Center of glass</td>
<td>No visible damage</td>
</tr>
<tr>
<td>800 lbf-ft (4’ drop height)</td>
<td>Center of glass</td>
<td>No visible damage</td>
</tr>
<tr>
<td>1200 lbf-ft (6’ drop height)</td>
<td>Center of glass</td>
<td>No visible damage</td>
</tr>
<tr>
<td>1600 lbf-ft (8’ drop height)</td>
<td>Center of glass</td>
<td>See Note #2</td>
</tr>
</tbody>
</table>

**General Note:** The test specimen was supported at the head and tested at a 14° slope (Reference Photo #1).

**Note #1:** The 200 lbf weight was gently applied perpendicular to the center of the glass. After 60 seconds of rest time, there was no visible damage to the skylight.

**Note #2:** At the 8’ drop height, the bag broke the exterior tempered glass and penetrated the interior laminated glass, deglazing the glass from frame at multiple locations.

**Conclusion:**

The specimen was evaluated in accordance with Occupational Safety and Health Administration (OSHA)/U.S. Department of Labor Regulations Standard 29 CFR §1910.29(e)(1) to be capable of supporting twice the maximum intended load, up to (600) ft-lb.

The specimen was evaluated in accordance with California Code of Regulations, Title 8, Section 3212 §(b) to be capable of safely supporting loads exceeding 400 ft-lb.
Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

Eric M. Brennan
Project Manager

Timothy J. McGill
Manager – Product Testing

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Photograph (1)
Appendix-B: Drawings (2)
<table>
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<th>Date</th>
<th>Page(s)</th>
<th>Revision(s)</th>
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<td>01/09/18</td>
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<td>Original report issue</td>
</tr>
</tbody>
</table>

This report produced from controlled document template ATI 00205, issued 03/05/09.
Appendix A

Photograph

Photo No. 1
Test Set-up and 200 lbf Bag
Appendix B

Drawings