

	Document Title:	Doc No:	<b>FRM B1-02</b>	
	<b>Structural Performance Certification Authorization Report</b>	Rev No: 7	Page: 1	Of: 1
Required By: PRO B1-03				

CAR & Product ID Number: 757 - 135.0  
Issue Date: 3/26/2019  
Revision Date: 7/30/2019  
Expiration Date: 3/25/2023  
Company Code: 757

This Certification Authorization Report (CAR) is issued by Keystone Certifications, Inc. (KCI) after full validation review, and is based on a standardized evaluation of the product conducted by an independent accredited laboratory in accordance with the specified referenced standard. Actual fenestration product performance may vary based on many factors, including installation, condition of the wall/roof substrate and the age of the product and installation components.

This report indicates the product is eligible for the application of Keystone Certification Program certification labels. Licensee stipulates in affixing certification labels to products, that those products are representative of the specimen evaluated and documented for certification authorization. Only products bearing such a certification label shall be considered certified. The information in this report can be verified at [www.keystonecerts.com](http://www.keystonecerts.com).

<b>Licensee Information:</b>	<b>Product Information:</b>
Pocahontas Aluminum Company, Inc. 2001 Industrial Drive, PO Box 756 Pocahontas, AR 72455 USA	Model: SHL21W PVC Single Hung Window Operator Type: H Config: BR/AV/EM/IM Max Width: 46 Max Height: 61

<b>Referenced Standard:</b>	<b>Product Rating:</b>
AAMA 1701.2-85/02 FMHC&S Std. 3280.403	Wind Zone II @ +38.0 psf/-46.0psf, 46x61

<b>Qualifying Test Information:</b>	
Test Report No:	Molimo-1731.02-109-12-R1
Test Report Expiration:	3/25/2023

**Authorized Signature:**

**Keystone Certifications, Inc.**  
145 Limekiln Rd. Suite 100B  
New Cumberland, Pennsylvania 17070  
Phone: 717-932-8500  
Fax: 717-932-8501

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<b>Licensee Information:</b>	<b>Product Information:</b>
Pocahontas Aluminum Company, Inc. 2001 Industrial Drive, PO Box 756 Pocahontas, AR 72455 USA	Model: SHL21W PVC Single Hung Window Operator Type: H Config: BR/AV/EM/IM Max Width: 36 Max Height: 60

<b>Referenced Standard:</b>	<b>Product Rating:</b>
AAMA 1701.2-85/02 / FMHC&S Std. 3280.403	Wind Zone II&III @ 48psf, 36x60

<b>Qualifying Test Information:</b>	
Test Report No:	Molimo-1731.02-109-12-R1
Test Report Expiration:	3/25/2023

**Authorized Signature:**

**Keystone Certifications, Inc.**  
 145 Limekiln Rd. Suite 100B  
 New Cumberland, Pennsylvania 17070  
 Phone: 717-932-8500  
 Fax: 717-932-8501

## TEST REPORT

AAMA 1701.2-95

AAMA 1704-85

AAMA 1704-12

REPORT NO.: 1731.02-109-12-R1

RENDERED TO: POCAHONTAS ALUMINUM COMPANY, INC.  
Pocahontas, AZ

PRODUCT TYPE: PVC Single Hung Widow

SERIES / MODEL: SHL21W

This report contains in its entirety:

Cover Page: 1 page  
Body of Report: 8 pages  
Drawings: 4 pages



2019.07.30 09:24:56 -04'00'

A handwritten signature in black ink, appearing to read "Michael D. Stremmel".

Test Date: 11/27/2018  
Revision 1: 7/30/2019

**CLIENT INFORMATION:** POCAHONTAS ALUMINUM COMPANY, INC.  
2001 Industrial Dr  
Pocahontas, AZ 72455

**TEST LABORATORY:** Molimo, LLC  
1410 Eden Road  
York, Pennsylvania 17402  
717-900-6034

**PROJECT SUMMARY:**

**PRODUCT TYPE:** PVC Single Hung Widow

**SERIES/MODEL:** SHL21W

**PROJECT SUMMARY:**

Molimo, LLC was contracted to perform testing on the above referenced product. The results are tested values and were secured by using the designated test methods. The specimens tested successfully met the performance requirements listed in the referenced specifications.

Specimen	Structural Load	Wind Zone Achieved
1	+1819 Pa (+38.0 psf)	Wind Zone II – Field of wall
1	-2202 Pa (-46.0 psf)	Wind Zone III – Field of wall
2	±2298 Pa (±48.0 psf)	Wind Zone II – Corner of wall Wind Zone III – Field of wall

**PROJECT DETAILS:**

**Test Date:** 11/27/2018

**Test Record Retention End Date:** 11/27/2022

**Test Location:** VEKA, Inc. test facility in Fombell, PA.

**Test Specimen Source:** The test specimen was provided by the client. Representative samples of the test specimen will be retained by Molimo for a minimum of four years from the test completion date.

**Drawing Reference:** The test specimen drawings were supplied by the client. The test specimen construction was verified by Molimo and was found to be representative of the product tested. A complete drawing packet is kept on file with Molimo.

**WITNESSES:**

The following representatives witnessed all or part of the testing.

<b>Name</b>	<b>Company</b>
Doug Merry	VEKA, Inc.
Cornell Charles	VEKA, Inc.
Joseph Allison	Molimo, LLC

**TEST METHODS:**

AAMA 1701.2-95 – *Voluntary Standard for Utilization in Manufactured Housing for Primary Windows and Sliding Glass Doors*

AAMA 1704-85 – *Voluntary Standard for Egress Window Systems for Utilization in Manufactured Housing*

AAMA 1704-12 – *Voluntary Standard for Egress Window Systems for Utilization in Manufactured Housing*

Code of Federal Regulations, Part 3280 – *Manufactured Home Construction and Safety Standards*, Subpart D, Section 3280.305(c)(1)(ii)(B)

**TEST SPECIMEN DESCRIPTION:****PRODUCT SIZES:**

Test Specimen #1:

Overall Size:	1168 mm x 1537 mm (46" x 60-1/2")
Overall Area:	1.8 m <sup>2</sup> (19.36 ft <sup>2</sup> )
Sash:	1124 mm x 772 mm (44-1/4" x 30-3/8")
Screen Size:	1137 mm x 743 mm (44-3/4" x 29-1/4")

Test Specimen #2:

Overall Size:	914 mm x 1537 mm (36" x 60-1/2")
Overall Area:	1.3 m <sup>2</sup> (15.1 ft <sup>2</sup> )
Sash:	870 mm x 772 mm (34-1/4" x 30-3/8")
Screen Size:	883 mm x 743 mm (34-3/4" x 29-1/4")

**FRAME CONSTRUCTION:**

Material:	Extruded PVC
Corner Details:	Miter cut and thermally welded
Other Details:	The fixed meeting rail was fastened to the jambs with four #8 x 3" pan head screws, two at each end. Each intersection was sealed with silicone sealant.

**TEST SPECIMEN DESCRIPTION:** (Continued)

**SASH CONSTRUCTION:**

Material: Extruded PVC  
 Corner Details: Miter cut and thermally welded

**REINFORCEMENT:**

Drawing Number	Material	Location
AF-5569	Extruded aluminum	Fixed meeting rail
AF-5570	Extruded aluminum	Lock rail, bottom rail, stiles

**GLAZING DETAILS:** *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen can be made.*

Glass Type: 5/8" IG

Glazing Construction: (exterior to interior)

3/32" thick annealed glass

7/16" Box shaped steel spacer, single sealed

3/32" thick annealed glass

Glazing Method: Exterior glazed against a bed of silicone sealant and secured with rigid vinyl glazing beads.

Glazing Bite: 1/2"

Daylight Opening:

Specimen #1 sash: 1045 mm x 692 mm (41-1/8" x 27-1/4")

Specimen #1 frame: 848 mm x 686 mm (43-1/2" x 27")

Specimen #2 sash: 791 mm x 692 mm (31-1/8" x 27-1/4")

Specimen #2 frame: 851 mm x 686 mm (33-1/2" x 27")

**WEATHERSTRIPPING:**

Description	Quantity	Location
0.187" backed by 0.270" high center fin pile	1 Row	Lock rail
0.187" backed by 0.270" high center fin pile	2 Rows	Sash stiles, bottom rail

**TEST SPECIMEN DESCRIPTION: (Continued)**
**DRAINAGE:**

Description	Quantity	Location
9/16" wide by 5/32" high weepslot	2	Exterior sill face, one 2" in from each end.
9/16" wide by 5/32" high weepslot	2	Interior sill track, one at each end.

**HARDWARE:**

Description	Quantity	Location
Composite sweep lock	2	Lock rail, one 8" from each end mating with integral groove in the fixed meeting rail
Composite surface mount tilt latch	2	Lock rail, one at each end
Interlocking metal tilt pin	2	Bottom rail, one at each end
Block and tackle balance system	2	One per jamb

**SCREEN CONSTRUCTION:**

Frame Material:	Formed Aluminum
Mesh Type:	Fiber
Corner Construction:	Square cut and secured with snap-in plastic corner keys
Mesh Attachment Method:	Flexible vinyl spline

**INSTALLATION:** The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/8" shim space. The exterior perimeter of the specimen was sealed with sealant.

Location	Anchor Description	Anchor Spacing
Head, sill, jambs	#8 x 2" truss head screw	Nominally spaced at 4-1/2" on center, and beginning at each corner fastened through the nailing fin and into the wood buck

**TEST RESULTS:** The temperature during testing was 19°C (67°F).

**TEST SPECIMEN #1:**

**STRUCTURAL TESTING:** (per ASTM E 330)

Test	Results	Allowable
+1190 Pa (+25.0 psf) -595 Pa (-12.5 psf)	Pass	No Damage

*Note 1: All loads were held for 10 seconds.*

*Note 2: Tape and film were used to seal against air leakage. In our opinion, the tape and film did not influence the results of the test.*

**AIR LEAKAGE TESTING:** (per ASTM E 283)

Test	Results	Allowable
Infiltration @ 75 Pa (1.57 psf)	2.5 L/s/m <sup>2</sup> (0.50 cfm/ft <sup>2</sup> )	2.5 L/s/m <sup>2</sup> (0.50 cfm/ft <sup>2</sup> )

**WATER PENETRATION TESTING:** (per ASTM E 331 and/or ASTM E 547)

Test	Results	Allowable
150 Pa (3.13 psf)	Pass	No Leakage

*Note 3: Water Penetration testing was performed with and without an insect screen.*

**OPTIONAL STRUCTURAL PERFORMANCE TESTS:** (per ASTM E 330)

Test	Results	Allowable
+1819 Pa (+38.0 psf) -2202 Pa (-46.0 psf)	Pass	No Damage

*Note 1: All loads were held for 10 seconds.*

*Note 2: Tape and film were used to seal against air leakage. In our opinion, the tape and film did not influence the results of the test.*

*Note 3: Structural performance achieved meets Wind Zone II for the Positive and Negative direction for all areas other than within 3'0" from each corner of the sidewall or endwall.*

*Note 4: Structural performance achieved meets Wind Zone III for the Negative direction for all areas other than within 3'0" from each corner of the sidewall or endwall.*

**SECONDARY TESTS:**

Test	Results	Allowable
Safety Drop Test (per AAMA 1701.2)	Pass	Sash stops at the next lower position while retaining glass



**TEST RESULTS:** (Continued)

**TEST SPECIMEN #1:** (Continued)

**AAMA 1704 TESTING**

Test	Results	Allowable
Clear Opening Width	1137 mm (44-3/4")	510 mm (20") min.
Clear Opening Height	689 mm (27-1/8")	610 mm (24") min.
Clear Opening Area	0.8 m <sup>2</sup> (8.4 ft <sup>2</sup> )	0.5 m <sup>2</sup> (5.0 ft <sup>2</sup> ) min.
Locks and Latches	53 N (12 lbf)	90 N (20 lbf) max.
Operable Sash	89 N (20 lbf)	90 N (20 lbf) max.
Removable Screen	44 kg (10lb)	9 kg (20 lb) max.

**TEST SPECIMEN #2:**
**STRUCTURAL TESTING:** (per ASTM E 330)

Test	Results	Allowable
+1190 Pa (+25.0 psf) -595 Pa (-12.5 psf)	Pass	No Damage

*Note 1: All loads were held for 10 seconds.*

*Note 2: Tape and film were used to seal against air leakage. In our opinion, the tape and film did not influence the results of the test.*

**AIR LEAKAGE TESTING:** (per ASTM E 283)

Test	Results	Allowable
Infiltration @ 75 Pa (1.57 psf)	2.4 L/s/m <sup>2</sup> (0.47 cfm/ft <sup>2</sup> )	2.5 L/s/m <sup>2</sup> (0.50 cfm/ft <sup>2</sup> )

**WATER PENETRATION TESTING:** (per ASTM E 331 and/or ASTM E 547)

Test	Results	Allowable
150 Pa (3.13 psf)	Pass	No Leakage

*Note 3: Water Penetration testing was performed with and without an insect screen.*

**TEST RESULTS:** (Continued)

**TEST SPECIMEN #2:** (Continued)

**OPTIONAL STRUCTURAL PERFORMANCE TESTS:** (per ASTM E 330)

Test	Results	Allowable
+2298 Pa (+48.0 psf) -2298 Pa (-48.0 psf)	Pass	No Damage

*Note 1: All loads were held for 10 seconds.*

*Note 2: Tape and film were used to seal against air leakage. In our opinion, the tape and film did not influence the results of the test.*

*Note 3: Structural performance achieved meets Wind Zone II for the Positive and Negative directions for all areas including within 3'0" from each corner of the sidewall or endwall.*

*Note 4: Structural performance achieved meets Wind Zone III for the Positive and Negative direction for all areas other than within 3'0" from each corner of the sidewall or endwall.*

**SECONDARY TESTS:**

Test	Results	Allowable
Safety Drop Test (per AAMA 1701.2)	Pass	Sash stops at the next lower position while retaining glass

**AAMA 1704 TESTING**

Test	Results	Allowable
Clear Opening Width	883 mm (34-3/4")	510 mm (20") min.
Clear Opening Height	689 mm (27-1/8")	610 mm (24") min.
Clear Opening Area	0.6 m <sup>2</sup> (8.4 ft <sup>2</sup> )	0.5 m <sup>2</sup> (5.0 ft <sup>2</sup> ) min.
Locks and Latches	53 N (12 lbf)	90 N (20 lbf) max.
Operable Sash	89 N (20 lbf)	90 N (20 lbf) max.
Removable Screen	44 kg (10lb)	9 kg (20 lb) max.

A copy of this report, detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Molimo, LLC for the entire test record retention period. At the end of this retention period, the service life of this report will expire.

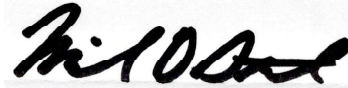
Results obtained are tested values and were secured by using the designated test methods. This test report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s)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

For MOLIMO, LLC:



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Joseph E. Allison  
Regional Project Manager



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Michael D. Stremmel, P.E.  
Senior Project Engineer

JEA:jld

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

Appendix-A: Drawings: (4) Complete drawings packet on file with Molimo, LLC

**Revision Log**

<b>Rev. #</b>	<b>Date</b>	<b>Page(s)</b>	<b>Revision(s)</b>
1	7/30/2019	Cover	Added P.E. Seal

## **Appendix A**

### **Drawings**

(Complete drawings packet on file with Molimo, LLC)



# ***BILL OF MATERIALS***

## **WELDED TILT SINGLE HUNG (SHL21WW Keeperless)**

**NOTE: THIS BILL OF MATERIALS REFLECTS THE SYSTEM AS TESTED. DEVIATION FROM THE BILL OF MATERIALS IS NOT RECOMMENDED BY VEKA INC. AND MAY REDUCE THE PERFORMANCE OF THE FINISHED PRODUCT.**

<u><b>PVC PROFILES:</b></u>	<u><b>PART #</b></u>	<u><b># PER UNIT</b></u>	<u><b>SOURCE</b></u>
JAMBS	SHL21	2	VEKA
HEAD	SHL21	1	VEKA
SILL	SHL23	1	VEKA
KEEPER RAIL	SHS214	1	VEKA
STILES / BOTTOM RAIL	SHS25	3	VEKA
LOCK RAIL	SHS26	1	VEKA
BALANCE COVER	BC01	2	VEKA
GLAZING BEADS	BVP01	8	VEKA
INTERMEDIATE JAMB	SHL220	A/R	VEKA

**REINFORCING PROFILES:**

**NOTE: Refer to test reports in technical manual for reinforcing guidelines.**

JAMBS (SHL21)		A/R	
SILL (SHL23)		A/R	
KEEPER RAIL (SHS214)	AF-5569	A/R	AFCO
STILES / BOTTOM RAIL(SHS25)	AF-5570	A/R	AFCO
LOCK RAIL (SHS26)	AF-5570	A/R	AFCO

**HARDWARE:**

SWEEP LATCH	3174*	1-2	VISION
FLUSH MOUNT TILT LATCH ASSY	79910	1	ASHLAND
(STANDARD) OR	79915	1	ASHLAND
(WITH SCALLOP)	79920	1	ASHLAND
	79925	1	ASHLAND
BALANCE	INVERTED BLOCK AND TACKLE	2	AMESBURY
BALANCE SHOE		2	AMESBURY
PIVOT BAR		2	AMESBURY
DRYWALL CLIP	"L" BRACKET	2	HMS

**GLAZING:**

GLAZING SHIMS	5/8" X 5/8" X 1/8"	A/R	TREMCO
	5/8"x 5/8" x 1/8"	A/R	FRANK LOWE CO
GLAZING TAPE	1/16" X 1/2" (AWT)	A/R	ARLON
	1/16" X 1/2"	A/R	NORTON
	1/16" X 1/2"	A/R	VENTURE





# BILL OF MATERIALS

## WELDED TILT SINGLE HUNG (SHL21WW Keeperless)

**NOTE:** THIS BILL OF MATERIALS REFLECTS THE SYSTEM AS TESTED. DEVIATION FROM THE BILL OF MATERIALS IS NOT RECOMMENDED BY VEKA INC. AND MAY REDUCE THE PERFORMANCE OF THE FINISHED PRODUCT.

<u>GLAZING:</u>	<u>PART #</u>	<u># PER UNIT</u>	<u>SOURCE</u>
SILICONE SEALANT	NOVAFLEX**	A/R	NOVAGUARD
LIQUID BACK BEDDING	SBC1M150	A/R	NOVAGUARD
SILICONE	896	A/R	PECORA
	5733	A/R	SCHNEE MOREHEAD
	899	A/R	DOW CORNING

### WEATHERSTRIPPING:

WEATHERPILE	.270-.187	FS7826-187 (WHITE)	A/R	SCHLEGEL
	.270-.187	3027W (WHITE)	A/R	ULTRAFAB
	.270-.187	27018758WHWF (WHITE)	A/R	AMESBURY

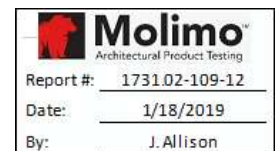
### SCREWS:

**NOTE:** All screws are zinc plated or stainless steel sheet metal type, unless otherwise noted.

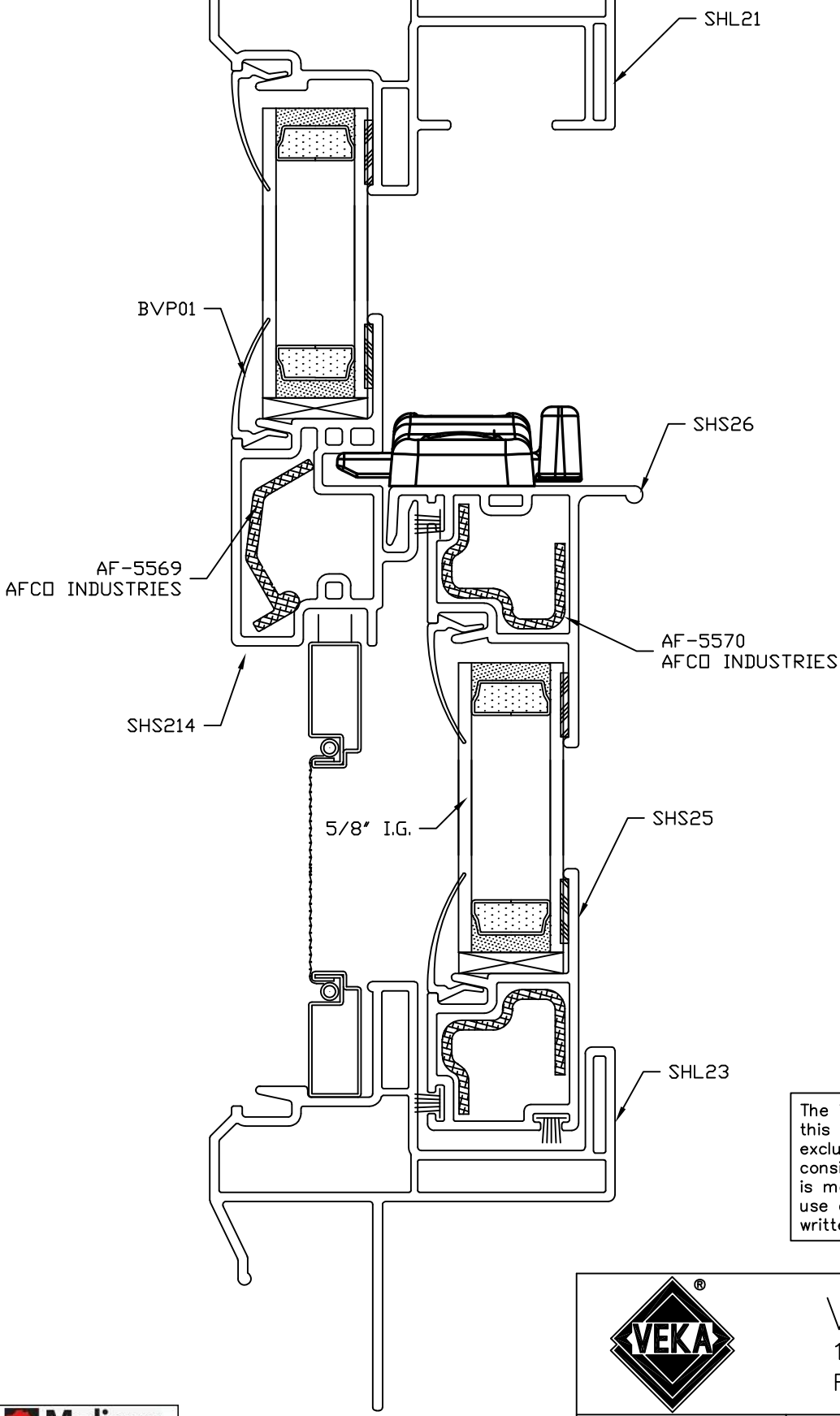
SWEEP LATCH		#6 X 3/4" FHP **	2-4	MERCHANTS
BALANCE		#8 X 1" FHP	2	MERCHANTS
PIVOT BAR		#6 X 3/8" TYPE F TRUSS HD	4	MERCHANTS
KEEPER RAIL		#6 X 1-1/2" THP	4	MERCHANTS
DRYWALL CLIP				
(CLIP TO JAMB)		#6 X 3/4" FHP	4	MERCHANTS
(CLIP TO KEEPER RAIL)		GRADE 10 #44	4	MERCHANTS
		BLIND RIVET		

\*\* = COLOR  
A/R = AS REQUIRED

04/21/2016  
REV.5/24/16



**NOTE:**  
 FOR OTHER PROFILE, GLAZING BEAD,  
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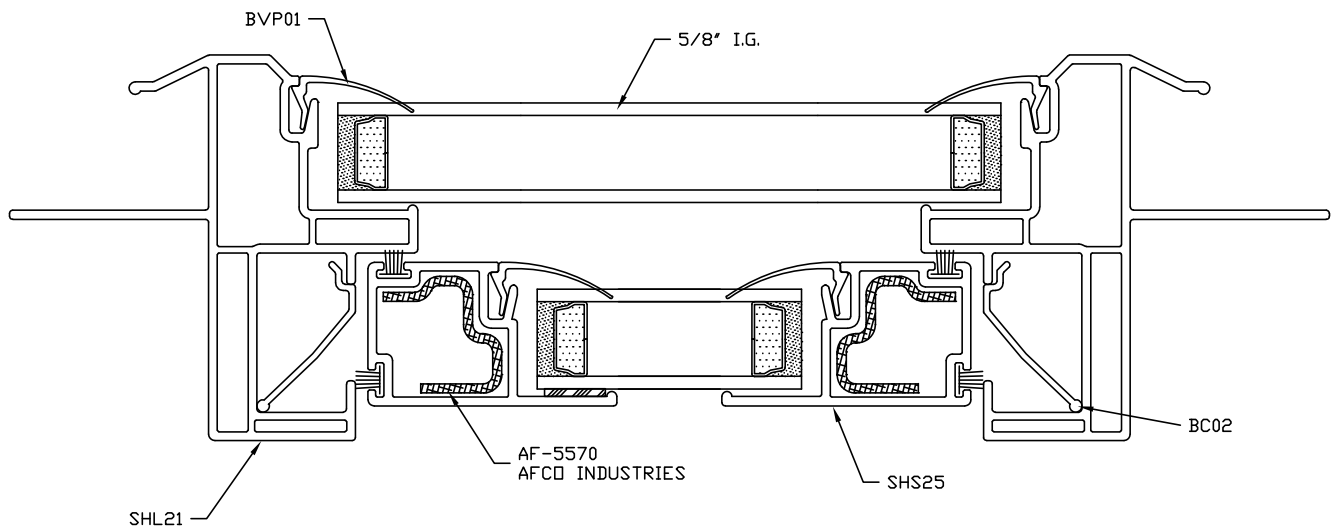
**VEKA INC.**  
 100 VEKA DRIVE  
 FOMBELL, PA 16123

**Molimo**  
 Architectural Product Testing  
 Report #: 1731.02-109-12  
 Date: 1/18/2019  
 By: J.Allison

DRAWN: B.JF	DATE: 14 JAN 19	SCALE: FULL
CHK'D:	DATE:	APP'V'D:
TITLE SINGLE HUNG SHL21WW VERTICAL ASSEMBLY [POCAHONTAS]		DWG. #SHL21WW KL



**NOTE:**  
 FOR OTHER PROFILE, GLAZING BEAD,  
 & GLASS OPTIONS, PLEASE SEE THE  
 LINEAL PROFILE CHARTS FOR THIS  
 SYSTEM.



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**Molimo™**  
 Architectural Product Testing

Report #: 1731.02-109-12

Date: 1/18/2019

By: J.Allison

**VEKA** INC.  
 100 VEKA DRIVE  
 FOMBELL, PA 16123

DRAWN: BJF	DATE: 14 JAN 19	SCALE: FULL
CHK'D:	DATE:	APPV'D:
TITLE: SINGLE HUNG SHL21WW HORIZONTAL ASSEMBLY[POCAHONTAS]		DWG. # SHL21WW KL