



SUBMITTAL PACKAGE

SH46 – Single-Hung Window

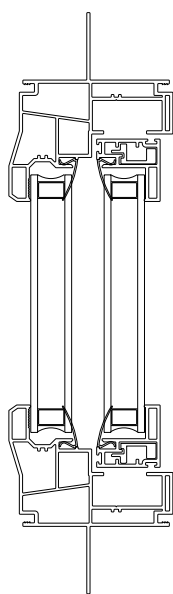
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FEATURES and BENEFITS

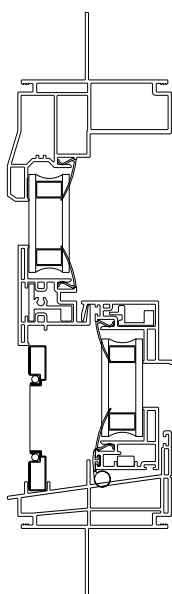
- Made in the USA of 100% U.S. components.
- Lead free
- EnergyStar® rated and labeled
- Aesthetically-pleasing exterior frame design
- All-welded frame and sash
- Constant force balance system
- DP50 performance levels
- Dual weatherstripping
- Easy drywall pass-through capability
- Full complement of accessory profiles
- Full family of products (hung, slider, and picture)
- Factory applied WM-180 brick mould or 5/4 x4 exterior trim available with nail fin
- Full 1 ½" integral nail fin
- Impact rated grade 50 performance available
- 2 7/8" frame with integral nail fin
- Multi-chambered vinyl profiles for thermal efficiency
- Optimum designed aluminum sash reinforcement
- Sloped sill design for efficient water evacuation
- Long reach interlock. No colliding or missing
- Sweep lock, no keeper needed. Passes forced entry



LC
LIGHT COMMERCIAL
RATED



Top View



Side View

PERFORMANCE

THERMAL INSULATION

GLASS	Uc Value	R Value	SHGC
Low-E 270	0.30	3.33	0.27
Low-E 366	0.30	3.33	0.20
Low-E 366 w/ i89	0.26	4.00	0.20

STRUCTURAL DATA

Air Infiltration @ 25mph	0.14 cfm/ft²
Water Penetration	7.50 psf
Uniform Loads	+/- 75.00 psf

AAMA RATING: PG50-H





**NFRC U-FACTOR, SHGC, VT, &
CONDENSATION RESISTANCE
COMPUTER SIMULATION REPORT**

(Revised)

**Rendered to:
CUSTOM VINYL PRODUCTS, LLC**

**SERIES/MODEL:
SH46 Single Hung**

Report Number: D9544.10-116-45
Original Report Date: 06/25/15
Revised Report Date: 04/15/16



NFRC U-FACTOR, SHGC, VT, & CONDENSATION RESISTANCE COMPUTER SIMULATION REPORT

(Revised)

Rendered to:
CUSTOM VINYL PRODUCTS, LLC
260 Enterprise Drive
Newport News, Virginia 23603

Report Number: D9544.10-116-45
Simulation Date: 07/16/14
Original Report Date: 06/25/15
Revised Report Date: 04/15/16

Project Summary:

Architectural Testing, Inc., an Intertek Company (Intertek-ATI) was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance, and Condensation Resistance* computer simulations in accordance with the National Fenestration Rating Council (NFRC). The products were evaluated in full compliance with NFRC requirements to the standards listed

**NFRC's Condensation Resistance rating is NOT equivalent to a Condensation Resistance Factor (CRF) determined in accordance with AAMA 1503.*

Standards:

ANSI/NFRC 100-2014: Procedure for Determining Fenestration Product U-Factors
ANSI/NFRC 200-2014: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence
NFRC 500-2014: Procedure for Determining Fenestration Product Condensation Resistance Values

Software:

Frame and Edge Modeling: THERM 7.4.3
Center-of-Glass Modeling: WINDOW 7.4.8
Total Product Calculations: WINDOW 7.4.8
Spectral Data Library: IGDB 45.0

Simulations Specimen Description:

Series/Model: SH46 Single Hung
Type: Vertical Slider, Single Hung
Frame Material: VI Vinyl w/ Reinforcement - Interlock
Sash Material: VI Vinyl w/ Reinforcement - Interlock
Standard Size: 1200mm x 1500mm

Modeling Assumptions/Technical Interpretations:

- 1) To prevent air infiltration, tape was applied to all interior sash crack locations.
- 2) The nailing fin was not modeled because it was deemed removable by the manufacturer.
- 3) Dividers were not modeled per ANSI/NFRC 100-2014, Section 4.2.4.1.D.ii.

Specialty Products Table:

The specialty products method allow the manufacturer to determine the overall product SHGC and VT for any glazing option. The center of glass SHGC and/or VT must be determined using WINDOW 7.4.8. The method gives overall product SHGC and VT indexed on center of glass properties. All values used in the calculations are truncated to six decimal place precision.

	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.004611	0.007408	0.010047
SHGC1	0.806804	0.723831	0.645540
VT0	0.000000	0.000000	0.000000
VT1	0.802192	0.716423	0.635493

$$\text{SHGC} = \text{SHGC0} + \text{SHGCc} (\text{SHGC1} - \text{SHGC0})$$

$$\text{VT} = \text{VT0} + \text{VTc} (\text{VT1} - \text{VT0})$$

Validation Matrix:

The following products are part of a validation matrix. Only one is required for validation testing.

<i>Product Line</i>	<i>Report Number</i>
SH46 Single Hung	D9544.04-116-45
SS46 Single Slider	D9546.04-116-45

Spacer Option Description

		<i>Sealant</i>	
<i>Spacer Type</i>		<i>Primary</i>	<i>Secondary</i>
Cardinal XL Edge Spacer		PIB	Silicone
			<i>Code</i>
			SS-D

Grid Option Description

<i>Grid Size</i>	<i>Grid Type</i>	<i>Grid Pattern</i>
3/16" x 5/8"	Aluminum Rectangular Grid (Painted)	NFRC Standard
3/16" x 13/16"	Aluminum Rectangular Grid (Painted)	NFRC Standard
5.5mm x 18mm	Aluminum Contour Grid (Painted)	NFRC Standard
5.5mm x 25mm	Aluminum Contour Grid (Painted)	NFRC Standard
1/8" SDL		

Reinforcement Option Description

<i>Location</i>	<i>Material</i>
Interlock	Aluminum

Gas Filling Technique Description

<i>Fill Type</i>	<i>Method</i>
90% Argon	Single Probe, Timed

Edge-of-Glass Construction

<i>Interior Condition</i>	
	Rigid PVC Glazing Bead Against Glass
<i>Exterior Condition</i>	
	Silicone Sealant Between Rigid PVC Frame and Glass

Weatherstripping

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Finpile	2 Rows	Jamb Stiles
Finpile	1 Row	Lock Rail
Foam-filled Bulb Seal	1 Row	Bottom Rail

Frame/Sash Materials Finish

<i>Interior</i>	
	Vinyl
<i>Exterior</i>	
	Vinyl

NFRC 100/200/500 Summary Sheet SH46 Single Hung

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC)					Visible Transmittance (VT)		Condensation Resistance	
	Grids (None / <1 / >=1)											
1	E270 / ARG90 / CLR (2MM/2MM) - 3/4" IG											
	0.087	0.563	0.087					ARG90	0.037(#2)	CL	SS-D	N,G,S
	U-Factor 0.31			SHGC (N / <1) 0.30 / 0.27					VT (N / <1) 0.57 / 0.51		CR 59	
2	E366 / ARG90 / CLR (2MM/2MM) - 3/4" IG											
	0.087	0.563	0.087					ARG90	0.022(#2)	CL	SS-D	N,G,S
	U-Factor 0.30			SHGC (N / <1) 0.22 / 0.20					VT (N / <1) 0.53 / 0.47		CR 59	
3	E270 / ARG90 / CLR (3MM/3MM) - 3/4" IG											
	0.118	0.500	0.118					ARG90	0.037(#2)	CL	SS-D	N,G,S
	U-Factor 0.30			SHGC (N / <1) 0.30 / 0.27					VT (N / <1) 0.56 / 0.50		CR 56	
4	E366 / ARG90 / CLR (3MM/3MM) - 3/4" IG											
	0.117	0.500	0.118					ARG90	0.022(#2)	CL	SS-D	N,G,S
	U-Factor 0.30			SHGC (N / <1) 0.22 / 0.20					VT (N / <1) 0.52 / 0.46		CR 59	
5	E366 / ARG90 / i89 (2MM/2MM) - 3/4" IG											
	0.087	0.563	0.087					ARG90	0.022(#2) / 0.149(#4)	CL	SS-D	N,G,S
	U-Factor 0.26			SHGC (N / <1) 0.22 / 0.20					VT (N / <1) 0.51 / 0.46		CR 47	
6	E366 / ARG90 / i89 (3MM/3MM) - 3/4" IG											
	0.117	0.500	0.117					ARG90	0.022(#2) / 0.149(#4)	CL	SS-D	N,G,S
	U-Factor 0.25			SHGC (N / <1) 0.22 / 0.20					VT (N / <1) 0.51 / 0.45		CR 47	
7	E270 / ARG90 / CLR (2MM/2MM) - 5/8" IG											
	0.087	0.438	0.087					ARG90	0.037(#2)	CL	SS-D	N,S
	U-Factor 0.30			SHGC (N / <1) 0.30 / 0.27					VT (N / <1) 0.57 / 0.51		CR 58	
8	E270 / ARG90 / CLR (2MM/2MM) - 5/8" IG											
	0.087	0.438	0.087					ARG90	0.037(#2)	CL	SS-D	G
	U-Factor 0.31			SHGC (<1) 0.27					VT (<1) 0.51		CR 58	

The Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation, and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening.

Ratings values included in this report are for submittals to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes. The ratings values were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy.

Intertek-ATI is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The values included in this report are not considered in compliance with ANSI/NFRC 100, ANSI/NFRC 200, and/or NFRC 500 unless the associated validation test requirements have been satisfied, as applicable.

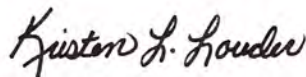
This report is reissued in the name of Custom Vinyl Products, LLC through written authorization of Veka Inc., to whom the original report was rendered. The original Veka Inc. report number is D9544.01-116-45.

Intertek-ATI will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Intertek-ATI for the entire test record retention period. The test record retention end date for this report is July 16, 2018.

Results obtained are simulated 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 product simulated. This report may not be reproduced, except in full, without the written approval of Intertek-ATI

For INTERTEK-ATI:

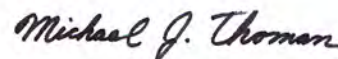
SIMULATED BY:



Digitally Signed by: Kristen Louder

Kristen L. Louder
Senior Simulation Technician
NFRC Certified Simulator

REVIEWED BY:



Digitally Signed by: Michael J. Thoman

Michael J. Thoman
Director - Simulations and Thermal Testing
Simulator-In-Responsible-Charge

KLL:kl

D9544.10-116-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (14)

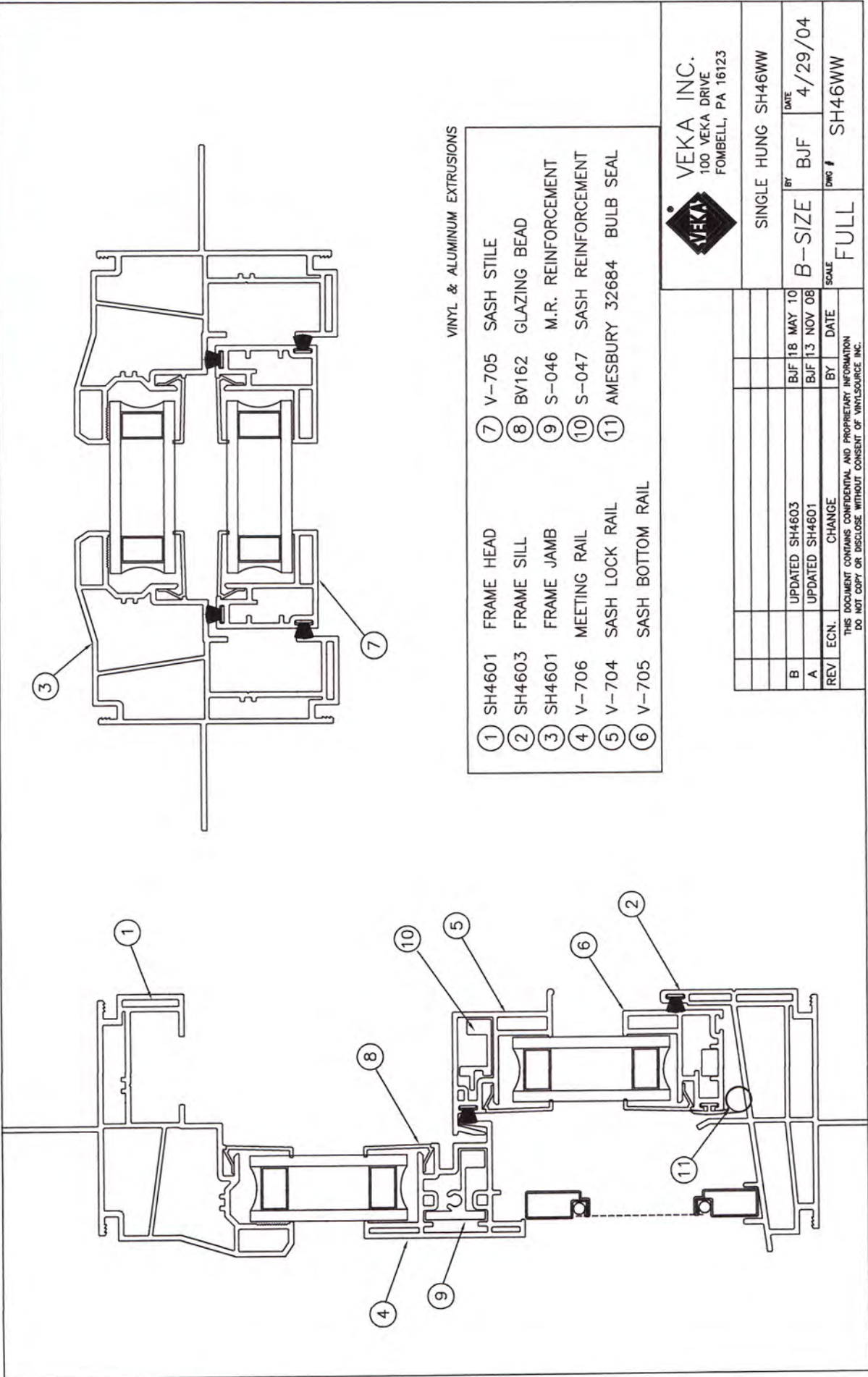
Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01R0	07/18/14	All	Original Report Issued to Veka Inc.
.04R0	06/25/15	All	Report Reissued to Custom Vinyl Products, LLC.
.04R1	08/27/15	Page 4	Corrected Boundary Conditions for Option #1.
.10R0	03/09/16	Page 4	Added Option #7
.10R1	04/15/16	Page 4	Corrected Frame in Head Model, Removed Reinforcement in Stile, Added Option #8

All drawings and Bills of Material used to simulate this product are enclosed in this Appendix
Some drawings may be omitted at the extruder's request.

Appendix A

D9544.10-116-45



VINYL & ALUMINUM EXTRUSIONS

- | | | | |
|----------|------------------|------------------|--------------------|
| ① SH4601 | FRAME HEAD | ⑦ V-705 | SASH STILE |
| ② SH4603 | FRAME SILL | ⑧ BV162 | GLAZING BEAD |
| ③ SH4601 | FRAME JAMB | ⑨ S-046 | M.R. REINFORCEMENT |
| ④ V-706 | MEETING RAIL | ⑩ S-047 | SASH REINFORCEMENT |
| ⑤ V-704 | SASH LOCK RAIL | ⑪ AMESBURY 32684 | BULB SEAL |
| ⑥ V-705 | SASH BOTTOM RAIL | | |



VEKA INC.
100 VEKA DRIVE
FOMBEL, PA 16123

SINGLE HUNG SH46WW	
B-SIZE	DATE
BJF	4/29/04
SCALE	DWG #
FULL	SH46WW

REV	ECN.	CHANGE	BY	DATE
B		UPDATED SH4603	BJF	18 MAY 10
A		UPDATED SH4601	BJF	13 NOV 08

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Architectural Testing

TEST REPORT

Report No.: D0768.01-501-47

Rendered to:

VEKA INC.
Fombell, Pennsylvania

PRODUCT TYPE: PVC Single Hung Window

SERIES/MODEL: SH46WW

SPECIFICATION: AAMA/WDMA/CSA 101/1.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

Title	Summary of Results
Primary Product Designator	Class R-PG50 1016 x 1600 (40 x 63) - H
Design Pressure	± 2400 Pa (± 50.13 psf)
Air Infiltration	0.7 L/s/m ² (0.13 cfm/ft ²)
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)

Test Completion Date: 08/14/2013

Reference must be made to Report No. D0768.01-501-47-r0, dated 10/18/13 for complete test specimen description and detailed test results.

1.0 Report Issued To: Veka Inc.
100 Veka Drive
Fombell, Pennsylvania 16123-0250

2.0 Test Laboratory: Architectural Testing, Inc.
1140 Lincoln Avenue
Springdale, Pennsylvania 15144
724-275-7100

3.0 Project Summary:

3.1 Product Type PVC Single Hung Window

3.2 Series/Model: SH46WW

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The specimen tested successfully met the performance requirements for a Class R-PG50 1016 x 1600 (40 x 63) - H rating.

3.4 Test Dates: 08/13/2013 – 08/14/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until October 18, 2017.

3.6 Test Location: Veka Inc. test facility in Fombell, Pennsylvania. Calibration of test equipment was performed by Architectural Testing in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

3.7 Test Sample Source: The test specimen was provided by the client. Representative samples of the test specimen(s) will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Doug Merry	Veka Inc.
Cornell Charles	Veka Inc.
Joe Allison	Architectural Testing, Inc.

4.0 Test Specification(s):

AAMA/WDMA/CSA 101/1.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 1.6 m ² (17.5 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1016	40	1600	63
Sash	962	37-7/8	775	30-1/2
Screen	930	36-5/8	743	29-1/4

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, jambs, fixed meeting rail	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally Welded
Fixed rail	Coped / butt type	The fixed rail was fastened to the jambs using two metal clips, one at each end. Each clip was fastened to the fixed rail with two #8 x 1" long screws, and to the jamb with two #8 x 1" long screws. Each end of the fixed rail was sealed to the mating jamb with a silicone sealant.

5.3 Sash Construction:

Sash Member	Material	Description
All rails and stiles	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally Welded

5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
0.187" x 0.270" center fin pile	1 Row	Sill, lock rail, bottom rail (interior)
0.187" x 0.270" center fin pile	2 Rows	Sash stiles
0.300" diameter foam-filled vinyl bulb with offset base	1 Row	Bottom rail (exterior)

5.5 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
3/4" IG	Rectangular shaped steel, single sealed	1/8" annealed	1/8" annealed	The sash was exterior glazed and the fixed lite was interior glazed. The glass was set against a silicone sealant and secured with rigid vinyl glazing beads.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Sash	1	902 x 718	35-1/2 x 28-1/4	1/2"
Frame	1	902 x 718	35-1/2 x 28-1/4	1/2"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot with flap	1-1/8" wide by 3/16" high	2	Exterior sill face accessory groove, one 3-1/2" in from each end
Weepslot	1" wide by 3/16" high	2	Intermediate sill wall, one at each end.
Weephole	1-1/4" deep by 1/2" wide	2	Sill/jamb intersection, one at each end
Weephole	3/8" wide by 1/8" deep	2	Bottom rail, one at each end

5.0 Test Specimen Description: (Continued)

5.7 Hardware:

Description	Quantity	Location
Composite sweep lock	2	Lock rail, one 8" in from each end engaging an extruded groove in the fixed meeting rail
Recessed plastic tilt latch	2	Top corners of sash
Metal pivot bars	2	Bottom rail, one at each end
Constant force balance system with locking tilt shoes	2	One per jamb

5.8 Reinforcement:

Drawing Number	Location	Material
S-046	Fixed meeting rail	Extruded aluminum
S-047	Lock rail, stiles	Extruded aluminum

5.9 Screen Construction:

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

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/8" shim space. The nail fin perimeter of the window was sealed with a silicone sealant.

Location	Anchor Description	Anchor Location
Integral nail fin	#8 x 2" truss head screw	Spaced nominally 8" on center, and beginning at each corner

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

Test Specimen #1:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 36 N (8 lbf) Maintain motion: 36 N (8 lbf) Latches: 22 N (5 lbf) Locks: 36 N (8 lbf)	Report Only 155 N (35 lbf) max. 100 N (22.5 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.7 L/s/m ² (0.13 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	3
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Forced Entry Resistance, per ASTM F 588, Type: A - Grade: 10	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Deglazing, per ASTM E 987 Operating direction, 320 N (72 lbf) Remaining direction, 230 N (52 lbf)	Pass Pass	Meets as stated Meets as stated	

7.0 Test Results: (Continued)

Test Specimen #1: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 360 Pa (7.52 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 taken at the exterior meeting rail +2400 Pa (+50.13 psf) -2400 Pa (-50.13 psf)	15.0 mm (0.59") 13.5 mm (0.53")	Report Only	4, 5, 6
Uniform Load Structural, per ASTM E 330 taken at the exterior meeting rail +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	0.8 mm (0.03") 1.0 mm (0.04")	3.6 mm (0.14") max. 3.6 mm (0.14") max.	5, 6

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: With and without insect screen.

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

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.

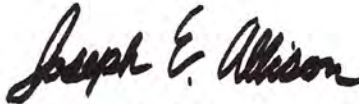
Note 5: Loads were held for 10 seconds.

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.

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

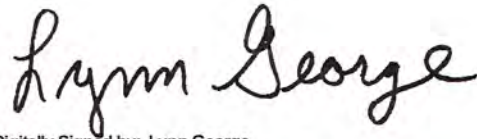
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For ARCHITECTURAL TESTING, Inc.



Digitally Signed by: Joseph E. Allison

Joseph E. Allison
Senior Technician



Digitally Signed by: Lynn George

Lynn George
Director – Regional Operations

JEA:sld

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (1) Complete drawings packet on file with Architectural Testing, Inc.

Appendix A

Alteration Addendum

Note: No alterations were required.

Appendix B

Drawings

Note: Complete drawings packet on file with Architectural Testing, Inc.



Architectural Testing

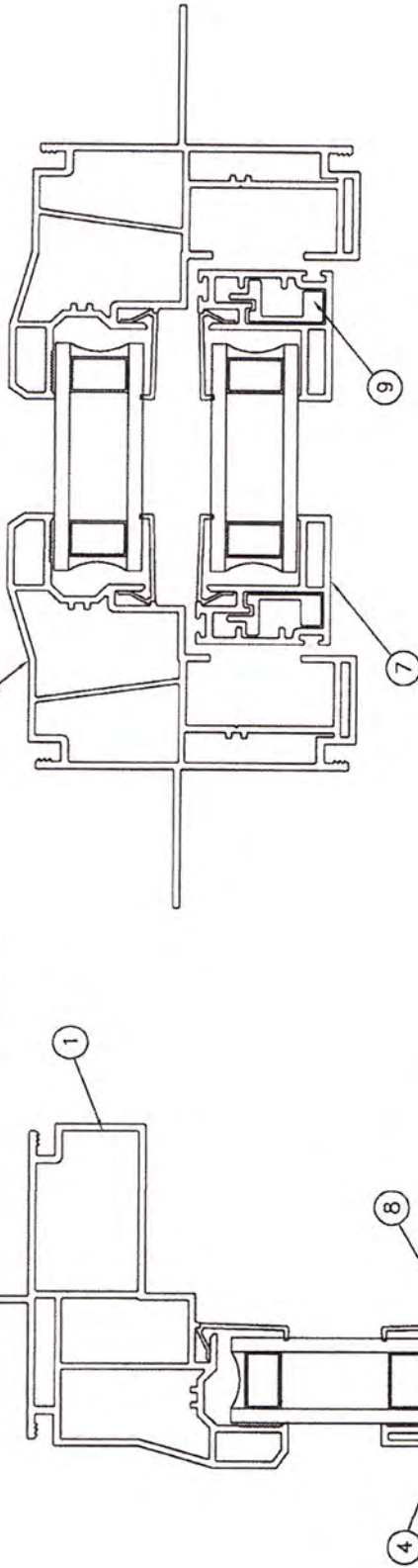
Test sample complies with these details.
Deviations are noted.

Report# 00768

Date: 12/7/13

Tech: 3

3



VINYL & ALUMINUM EXTRUSIONS

- | | | | | | |
|---|--------|------------------|----|----------------|--------------------|
| 1 | SH4602 | FRAME HEAD | 7 | V-705 | SASH STILE |
| 2 | SH4603 | FRAME SILL | 8 | BV162 | GLAZING BEAD |
| 3 | SH4601 | FRAME JAMB | 9 | S-046 | M.R. REINFORCEMENT |
| 4 | V-706 | MEETING RAIL | 10 | S-047 | SASH REINFORCEMENT |
| 5 | V-704 | SASH LOCK RAIL | 11 | AMESBURY 32684 | BULB SEAL |
| 6 | V-705 | SASH BOTTOM RAIL | | | |



VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

SINGLE HUNG SH46WW

B-SIZE	BJF	DATE	06/20/11
SCALE	FULL	DWG #	SH46WW

REV	ECN	CHANGE	BY	DATE
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AAMA 506 TEST REPORT

Report No.: D4097.02-501-44

Rendered to:

VEKA INC
Fombell, Pennsylvania

PRODUCT TYPE: PVC Single Hung Window
SERIES/MODEL: SH57WW/AL-Insert

Test Dates 12/18/13

Report Date: 03/23/15

Test Record Retention End Date: 01/27/18

1.0 Report Issued To: Veka Inc.
100 Veka Drive
Fombell, Pennsylvania 16123

2.0 Test Laboratory: Architectural Testing, Inc.
1140 Lincoln Avenue
Springdale, PA 15144
724-275-7100

3.0 Project Summary:

3.1 Product Type: PVC Single Hung Window

3.2 Series/Model: SH57WW/AL-Insert

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The samples tested met the performance requirements set forth in the referenced test procedures for a ± 2400 Pa (± 50.13 psf) Design Pressure with large missile impacts corresponding to Missile Level D and Wind Zone 3.

This product was originally tested as the MariTech Windows Series/Model 575, PVC Single Hung Window and is a reissue of the original Report No. D4097.01-501-44. This report is reissued in the name of Veka Inc. through written authorization by MariTech Windows.

3.4 Test Date: 12/18/2013

3.5 Test Location: Architectural Testing, Inc. test facility in Springdale, Pennsylvania.

3.6 Test Sample Source: The test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.7 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

3.8 List of Official Observers:

<u>Name</u>	<u>Company</u>
Lynn George	Architectural Testing, Inc.
Joe Allison	Architectural Testing, Inc.

4.0 Test Specification(s):

AAMA 506-08, *Voluntary Specifications for Impact and Cycle Testing of Fenestration Products.*

ASTM E 1886-05, *Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.*

ASTM E 1996-05, *Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Wind Borne Debris in Hurricanes.*

ASTM E 1996-09, *Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Wind Borne Debris in Hurricanes.*

5.0 Test Specimen Description:

5.1 Product Sizes:

Test Specimens #1 - #3:

Overall Area: 2.2 m ² (23.2 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1118	44	1930	76
Interior sash	1064	41-7/8	894	35-3/16

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, and jamb	Vinyl	Extruded
Sill dam (Dwg. No. D-200453)	Aluminum	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded
Sill dam	Straight cut and mechanically fastened	Secured through the sill into the wood buck with six #8 x 2" long pan head screws evenly spaced and beginning 3" in from each end. Sealed to the sill with a silicone silicone.

5.0 Test Specimen Description: (Continued)

5.3 Sash Construction:

Sash Member	Material	Description
Rails and stiles	Vinyl	Extruded
Fixed meeting rail	Vinyl	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded
Fixed meeting rail	Coped and butted	Secured through the jamb with two #8 x 3" long pan head screws at each end

5.4 Weatherstripping:

Description	Quantity	Location
0.187" backed by 0.320" thick polypile with center fin	1 Row	Fixed meeting rail and sill
0.187" backed by 0.320" thick polypile with center fin	2 Rows	All sash stiles
0.187" backed by 0.320" thick polypile with center fin	1 Row	All sash rails

5.5 Glazing:

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	Butyl, single sealed	1/8" thick clear annealed 0.090" thick Solutia Saflex PVB 1/8" thick clear annealed	1/8" thick clear annealed	The fixed lite was interior glazed and the sash was exterior glazed. The glass was set against a bed of Sikaflex®-552 Sealant and secured with snap-on vinyl glazing beads.

5.0 Test Specimen Description: (Continued)

5.5 Glazing: (Continued)

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed lite	1	1000 x 933	39-3/8 x 36-3/4	1/2"
Sash	1	972 x 797	38-1/4 x 31-3/8	1/2"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot with cover	1" wide by 1/4" high	3	Exterior sill face, one 4-1/2" from the corners and one midspan
Weephole	1/4" diameter	2	Sill, one 2" from each end, draining the screen track to the hollow below
Weep	1-1/4" wide by 1/4" high	2	Intermediate sill wall, one at each end draining the sill track to the lower hollow
Weepslot	3/8" wide by 5/32" high	2	Bottom rail, one 3" from each end

5.7 Hardware:

Description	Quantity	Location
Metal pivot bar	2	Bottom rail, one at each end
Metal cam lock with adjacent metal keeper	2	Lock rail, one 8-1/2" from each end
Metal surface mount tilt latches	2	Lock rail, one at each end
Metal tilt latch retainer clip	2	Jambs, at the sash tilt latch location
Block and tackle balance	2	One per jamb

5.0 Test Specimen Description: (Continued)

5.8 Reinforcement:

Drawing Number	Location	Material
D-201059	Fixed meeting rail	Aluminum
D-200475	Sash stiles and bottom rail	Aluminum
D-200474	Lock rail	Aluminum

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 3/16" shim space. The nail fin perimeter of the window was sealed with a silicone sealant.

Location	Anchor Description	Anchor Location
Integral nail fin	#8 x 2" long pan head screws	Nominally spaced at 6" on center, and beginning at each corner
Sill	#8 x 2" long pan head screws	Six screws evenly spaced starting 3" in from each end through the sill extension and into the wood buck.

7.0 Test Results: The results are tabulated as follows:

ASTM E 1886, Large Missile Impact

Conditioning Temperature: 21°C (70°F)

Missile Weight: 3969 g (8.75 lbs)

Missile Length: 2.4 m (7' 9-15/16")

Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Test Unit #1: Orientation within $\pm 5^\circ$ of horizontal

Impact #1: Missile Velocity: 15.4 m/s (50.5 fps)	
Impact Area:	Exterior center of sash
Observations:	Missile hit target area, no penetrations
Results:	Pass

Note: See Architectural Testing Sketch #1_ for impact locations.

Test Unit #2: Orientation within $\pm 5^\circ$ of horizontal

Impact #1: Missile Velocity: 15.4 m/s (50.5 fps)	
Impact Area:	Exterior upper right corner of sash
Observations:	Missile hit target area, no penetrations
Results:	Pass

Note: See Architectural Testing Sketch #2 for impact locations.

Test Unit #3: Orientation within $\pm 5^\circ$ of horizontal

Impact #1: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Exterior lower left corner of sash
Observations:	Missile hit target area, no penetrations
Results:	Pass

Note: See Architectural Testing Sketch #3 for impact locations.

7.0 Test Results: (Continued)
ASTM E 1886, Air Pressure Cycling

Test Unit #1

Design Pressure: ± 2400 Pa (± 50.13 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#1	#2	#3
480 to 1200 (10.0 to 25.1)	3500	1.34	3.5 (0.14)	9.3 (0.37)	3.5 (0.14)
0 to 1440 (0 to 30.1)	300	1.41	3.8 (0.15)	10.8 (0.42)	4.0 (0.16)
1200 to 1920 (25.1 to 40.1)	600	1.46	5.5 (0.22)	16.0 (0.63)	5.8 (0.23)
720 to 2400 (15.0 to 50.1)	100	2.03	6.8 (0.27)	18.8 (0.74)	7.0 (0.28)
			Permanent Set mm (inches)		
			0.3 (0.01)	1.8 (0.07)	0.5 (0.02)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#1	#2	#3
720 to 2400 (15.0 to 50.1)	50	2.02	8.0 (0.32)	18.0 (0.71)	1.3 (0.29)
1200 to 1920 (25.1 to 40.1)	1050	1.79	7.5 (0.30)	16.8 (0.66)	6.8 (0.27)
0 to 1440 (0 to 30.1)	50	2.34	5.8 (0.23)	12.3 (0.48)	5.0 (0.20)
480 to 1200 (10.0 to 25.1)	3350	2.02	5.5 (0.22)	11.5 (0.45)	5.0 (0.20)
			Permanent Set mm (inches)		
			1.5 (0.06)	1.8 (0.07)	1.0 (0.04)

Observations: No additional damage or deglazing was observed.

Result: Pass

Note: See Architectural Testing Sketch #4 for indicator locations. Test Specimens #1, #2 and #3 were cycled in a common chamber.

7.0 Test Results: (Continued)

ASTM E 1886, Air Pressure Cycling

Test Unit #2

Design Pressure: ± 2400 Pa (± 50.13 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#1	#2	#3
480 to 1200 (10.0 to 25.1)	3500	1.34	3.5 (0.14)	10.3 (0.40)	3.8 (0.15)
0 to 1440 (0 to 30.1)	300	1.41	3.5 (0.14)	11.3 (0.44)	4.3 (0.17)
1200 to 1920 (25.1 to 40.1)	600	1.46	5.0 (0.20)	16.5 (0.65)	6.8 (0.27)
720 to 2400 (15.0 to 50.1)	100	2.03	6.0 (0.24)	19.3 (0.76)	7.8 (0.31)
			Permanent Set mm (inches)		
			0.5 (0.02)	1.8 (0.07)	0.5 (0.02)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#1	#2	#3
720 to 2400 (15.0 to 50.1)	50	2.02	6.0 (0.24)	19.8 (0.78)	7.5 (0.30)
1200 to 1920 (25.1 to 40.1)	1050	1.79	5.5 (0.22)	18.0 (0.71)	6.8 (0.27)
0 to 1440 (0 to 30.1)	50	2.34	4.0 (0.16)	13.3 (0.52)	5.0 (0.20)
480 to 1200 (10.0 to 25.1)	3350	2.02	4.3 (0.17)	12.5 (0.49)	5.0 (0.20)
			Permanent Set mm (inches)		
			0.8 (0.03)	1.8 (0.07)	1.3 (0.05)

Observations: No additional damage or deglazing was observed.

Result: Pass

Note: See Architectural Testing Sketch #4 for indicator locations. Test Specimens #1, #2 and #3 were cycled in a common chamber.

7.0 Test Results: (Continued)

ASTM E 1886, Air Pressure Cycling

Test Unit #3

Design Pressure: ± 2400 Pa (± 50.13 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#1	#2	#3
480 to 1200 (10.0 to 25.1)	3500	1.34	3.0 (0.12)	10.3 (0.40)	3.8 (0.15)
0 to 1440 (0 to 30.1)	300	1.41	3.5 (0.14)	11.3 (0.44)	4.3 (0.17)
1200 to 1920 (25.1 to 40.1)	600	1.46	5.0 (0.20)	16.3 (0.64)	6.3 (0.25)
720 to 2400 (15.0 to 50.1)	100	2.03	5.8 (0.23)	19.0 (0.75)	7.3 (0.29)
			Permanent Set mm (inches)		
			0.3 (0.01)	1.3 (0.05)	0.3 (0.01)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#1	#2	#3
720 to 2400 (15.0 to 50.1)	50	2.02	6.0 (0.24)	17.0 (0.67)	8.3 (0.33)
1200 to 1920 (25.1 to 40.1)	1050	1.79	5.5 (0.22)	15.8 (0.62)	7.8 (0.31)
0 to 1440 (0 to 30.1)	50	2.34	4.3 (0.17)	11.8 (0.46)	6.0 (0.24)
480 to 1200 (10.0 to 25.1)	3350	2.02	3.8 (0.15)	11.0 (0.43)	5.8 (0.23)
			Permanent Set mm (inches)		
			1.0 (0.04)	1.8 (0.07)	1.5 (0.06)

Observations: No additional damage or deglazing was observed.

Result: Pass

Note: See Architectural Testing Sketch #4 for indicator locations. Test Specimens #1 and #2 were cycled in a common chamber.



General Note: Upon completion of testing, the specimens met the requirements of Section 7 of ASTM E 1996.

8.0 Test 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

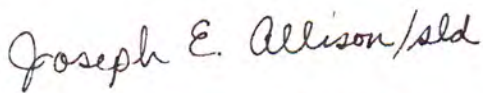
Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

This report is reissued in the name of Veka Inc. through written authorization of MariTech Windows to whom the original report was rendered. The original MariTech Windows Report No. is D4097.01-501-44.

The service life of this report will expire on the stated Test Record Retention End Date, at which time such materials as drawings, data sheets, samples of test specimens, copies of this report, and any other pertinent project documentation, shall be discarded without notice.

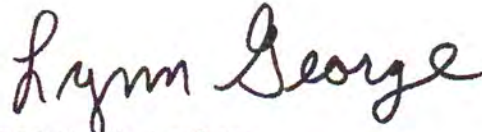
If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the 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.



Digitally Signed for: Joseph E. Allison by Sandy L. DiCaro

Joseph E. Allison
Senior Technician



Digitally Signed by: Lynn George

Lynn George
Director – Regional Operations

JEA:sld

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

Appendix-A: Sketches (4)

Appendix-B: Drawing(s) (1) Complete drawings packet on file with Intertek-ATI

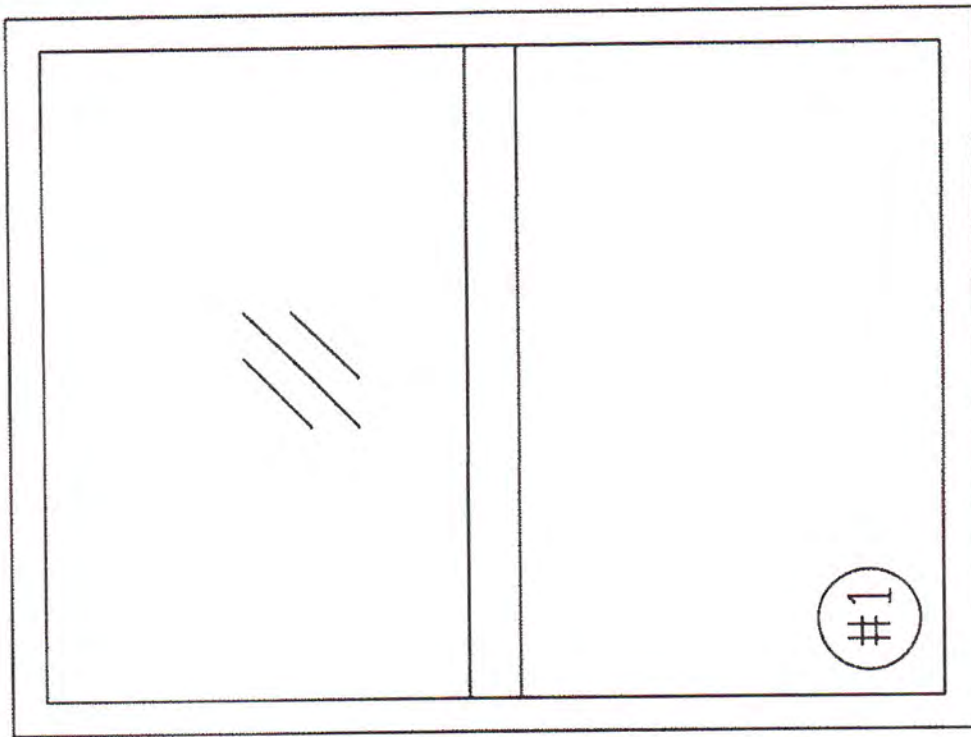


Test Report No.: D4097.02-501-44
Architectural Testing Report Date: 03/23/15
Test Record Retention End Date: 01/27/18

Appendix A

Sketches

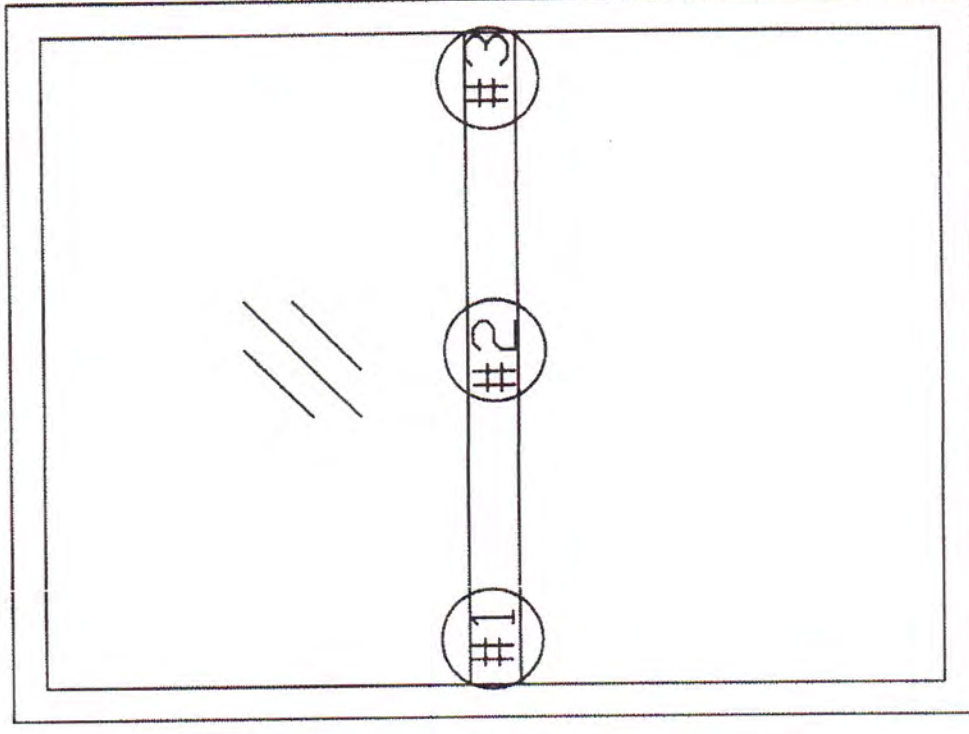
REV	DATE	DESCRIPTION	BY
			LG



Impact Locations

PROJECT NO. D4097.01 501-44	PROJECT NAME: 575 CLIENT: Maritech	DRAWING	Sketch #3 (Impacts)	DWG. BY: LG	SHEET 3 OF 4
		 Architectural Testing		DATE: 01-20-14	

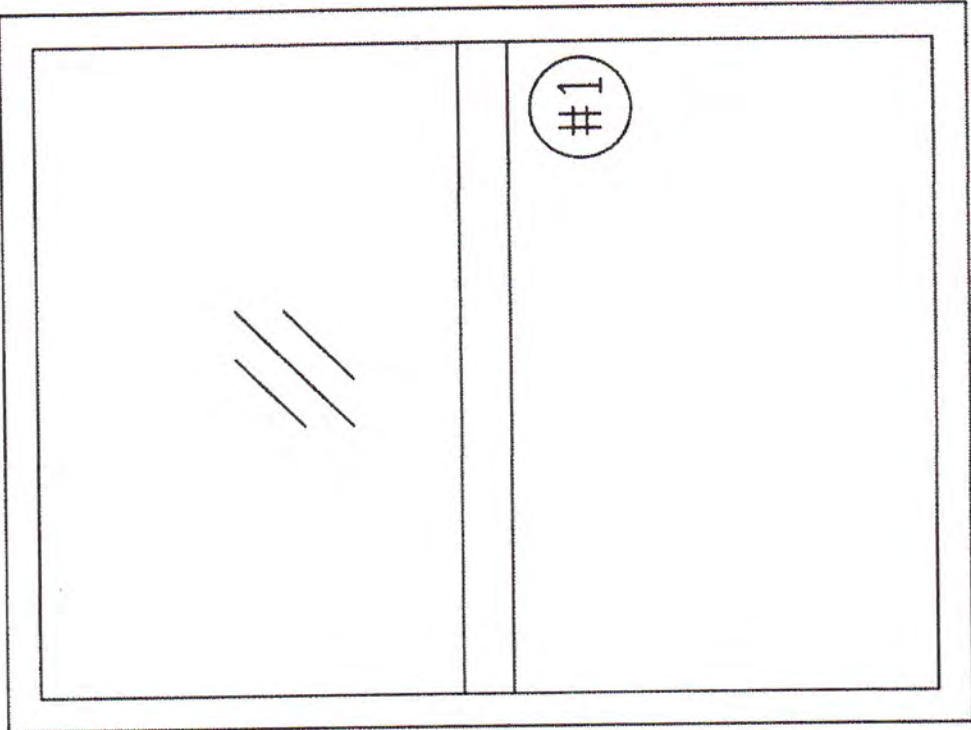
REV	DATE	DESCRIPTION	BY
			LG



INDICATOR LOCATIONS

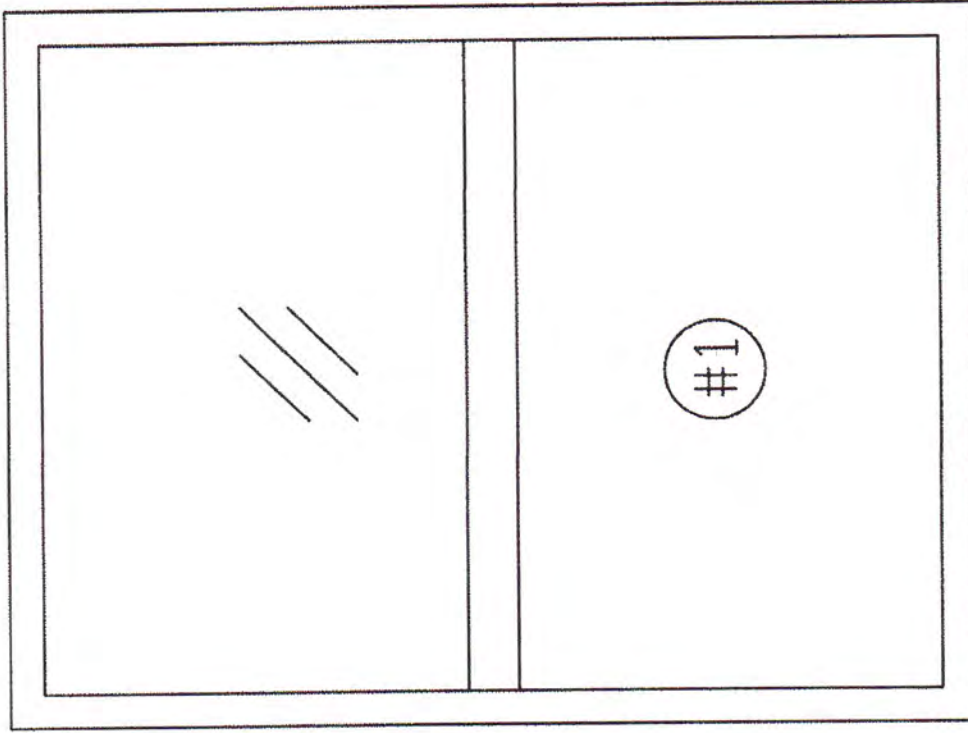
PROJECT NO. D4097.01 501-44	PROJECT NAME: 575 CLIENT: Maritech	DRAWING Sketch 4 (Indicator locations)	DWG. BY: LG DATE: 01-20-14	SHEET 4 OF 4
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REV	DATE	DESCRIPTION	BY
			LG



Impact Locations

PROJECT NO. D4097.01 501-44	PROJECT NAME: 575 CLIENT: Maritech	 Architectural Testing	DRAWING	Sketch 2 (Impact locations)	DWG. BY: LG	SHEET 2	OF 4
					DATE 01-20-14		



Impact Locations

REV	DATE	DESCRIPTION	BY
			LG

PROJECT NO. D4097.01.01 501-44	PROJECT NAME: 575 CLIENT: Moritech	DRAWING	Sketch #1 (Impacts)	DWG. BY: LG DATE: 01-20-14	SHEET 1 OF 4
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Test Report No.: D4097.02-501-44
Architectural Testing Report Date: 03/23/15
Test Record Retention End Date: 01/27/18

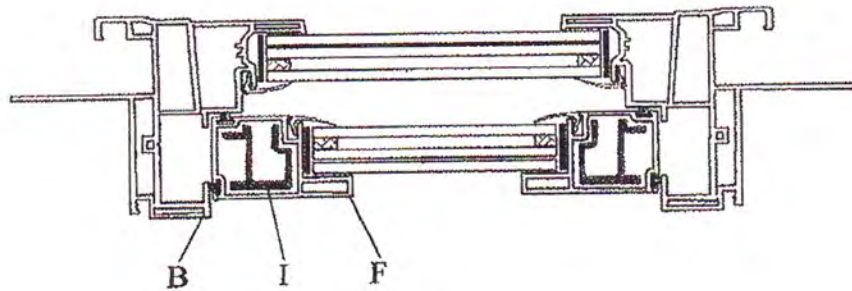
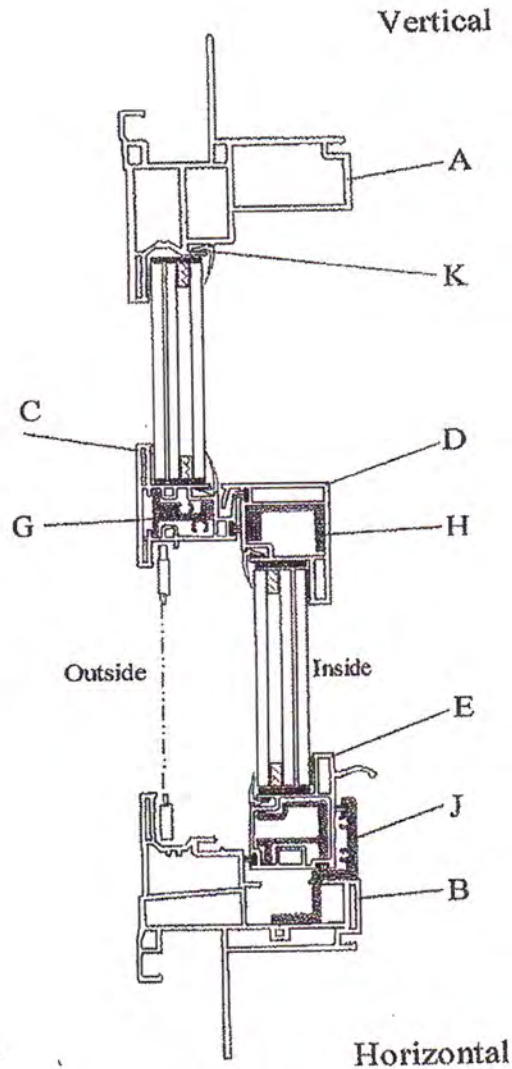
Appendix B

Drawings

Note: Complete drawings packet on file with Intertek-ATI

575 SH

- A. SH5702 - Head
- B. SH5701 - Sill, Jambs
- C. SH4604 - Meeting Rail
- D. SE4646 - Lock Rail
- E. SE4647 - Bottom Rail
- F. SE4645 - Stiles
- G. 1264 - Meeting Rail Rein.
- H. 1007 - Lock Rail Rein.
- I. 1008 - Bottom & Stile Rein.
- J. 1184 - Sill Dam Insert
- K. 1718R - Bead



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report #

AY097

Date

11/9/14

Technician

[Signature]



Limited Lifetime Warranty

Windows and sliding patio doors manufactured by **Custom Vinyl Products, LLC Windows and Doors** are guaranteed to be free of defects in material and workmanship under normal use and conditions. This Limited Warranty extends from the first date of purchase to the original owner and is subject to the terms and conditions stated herein:

- ❖ Vinyl components will be free from blistering, peeling, flaking, rotting, yellowing, or corrosion for the life of the product with the following exception:
 - Painted vinyl finishes – 10 years
 - Euroview vinyl products – 25 years
- ❖ There will be no material obstruction of vision on the internal surfaces of the insulated glass unit caused by seal failure for a period of 25 years with the following exceptions:
 - Laminated glass – 5 years
 - Architectural shaped glass – 10 years
 - Euroview product glass – 10 years
- ❖ Component parts will be covered for a period of 2 years with the following exceptions:
 - Motorized awning operators – 1 year
 - Screens – 90 days

The terms of this Limited Warranty exclude failures which are a result of or involve:

- ❖ Improper installation
- ❖ Accident, negligence, abuse, alteration, or improper use
- ❖ Excessive exposure to heat and cold outside of normal conditions
- ❖ Exposure to caustic agents
- ❖ Torn or damaged screens
- ❖ Glass breakage for any reason
- ❖ Corrosion of non-vinyl components in coastal areas, unless product is assembled with appropriate stainless steel hardware
- ❖ Condensation on external surfaces
- ❖ Failures caused by movement, expansion, or contraction of building or building components

This Limited Warranty covers materials only, and Custom Vinyl Products, LLC does not assume any expense or responsibility involved with the removal or reinstallation of replacement parts or any indirect, consequential, or incidental damage.



CUSTOM VINYL PRODUCTS, LLC

WINDOW INSTALLATION INSTRUCTIONS

- 1) Check that rough opening is between ½" to ¾" larger than the dimensions of the window, height and width.
- 2) Cut house wrap at 45 degree angle from top corners, about 6", and tack up out of the way.
- 3) Place wood shims in bottom right hand corner of the window opening.
- 4) Apply continuous ¼" bead of silicone based caulk to the inside of the nailing flange on the sides and top only.
- 5) Place window unit in the opening. **Sash must be locked during installation.** Rest window against shims in the right hand corner.
- 6) Attach the window using 1 ½" galvanized roofing nails through upper right side of nail fin. **Use pre-punched nail slots. Never use automated nailing devices.**
- 7) Place 2 foot level against left side of jamb and lift left side of window into level position.
- 8) Fasten head jamb.
- 9) Shim left and right side of jambs as to maintain a 1/16" continuous margin between sash and frame.
- 10) Fasten left side of jamb.
- 11) Attach the remainder of the unit approximately every other nail slot.
- 12) Check sash for easy operation. Check margins between sash and frame along the sides as well as top and bottom.
- 13) Apply 4" window flashing tape around the perimeter of the window, sides first then top. **Do not tape the bottom of the window.**

****FOR FURTHER FLASHING INSTRUCTIONS GO TO CUSTOMVINYL.NET**

CAUTION: GENERAL CONTRACTORS

- Keep sill area free of all debris. Do not allow brick or mortar to touch edges of window frame. Allow 1/8" gap and seal with caulk.
- Never use expandable foam insulation between window and rough opening. Use bat insulation.
- Window sash must always be locked during installation.

OPERATING INSTRUCTIONS

- 1) ALWAYS raise the sash before attempting to tilt.
- 2) Sash removal: Raise sash, tilt 90 degrees, and lift at each corner.
- 3) If the sash will not move up or down, remove sash as instructed above and repeat the process.

DuPont™ Flashing Systems Installation Guidelines

Installation Methods for DuPont™ Flashing System AFTER Water-Resistive Barrier (WRB) is Installed

Integral Flanged Window AFTER Water-Resistive Barrier (WRB)

Method applies to following product:

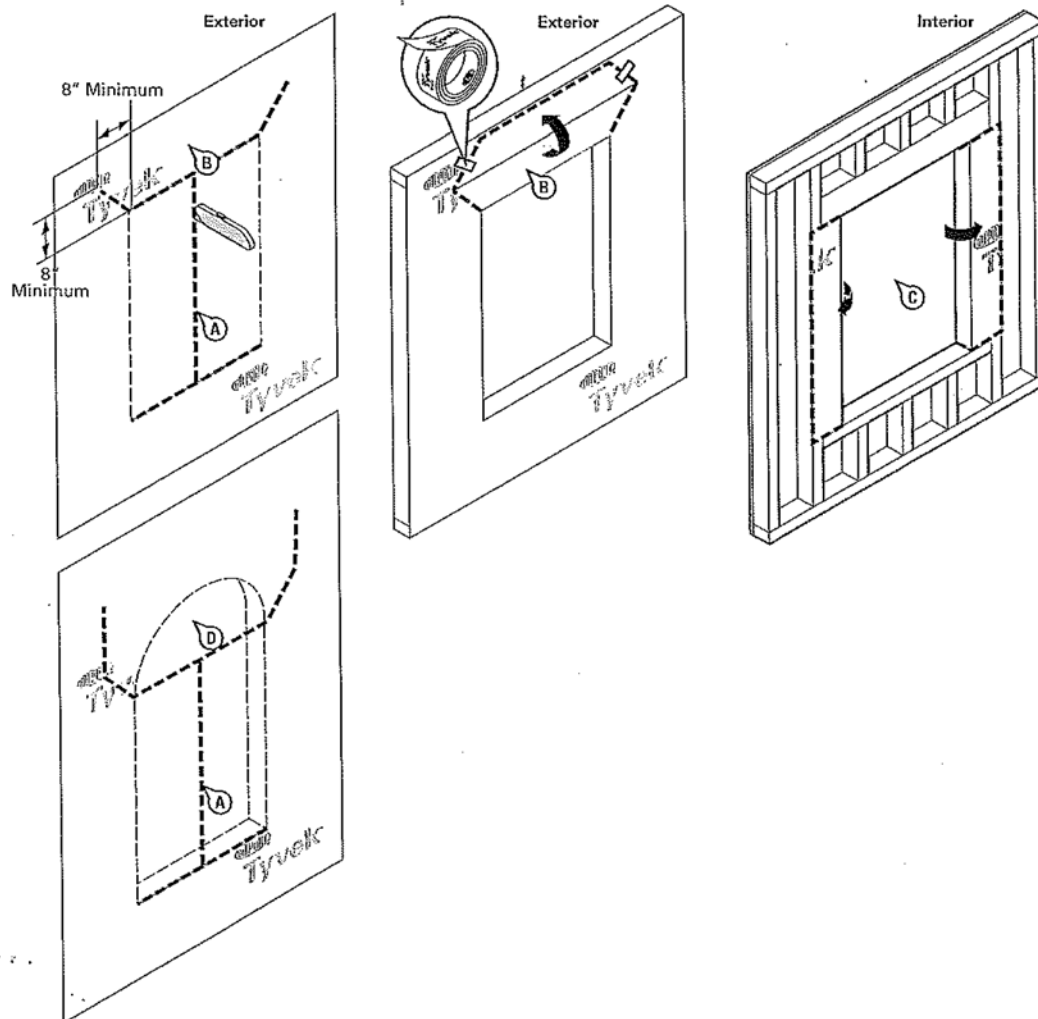
- DuPont™ StraightFlash™
- DuPont™ FlexWrap™

STEP 1

Prepare water-resistive barrier for window installation:

- Make an "I-Cut" (Standard I-Cut) in the WRB (modified I-Cut is also accepted). For an "I-Cut" begin with a horizontal cut across the bottom and the top of the window frame (for round top windows, the cut should begin 2" above the mull joint [see D]). From the center cut straight down to the sill.
- Cut two 45 degree slits a minimum of 8" from the corner of the header to create a flap above the rough opening to expose sheathing or framing members to allow head flashing installation (see step 5). Flip head flap up and temporarily secure with DuPont™ Tyvek® Tape. Some windows and flashing widths may require longer slits.
- Fold side flaps into rough opening, cut excess flaps, and secure.

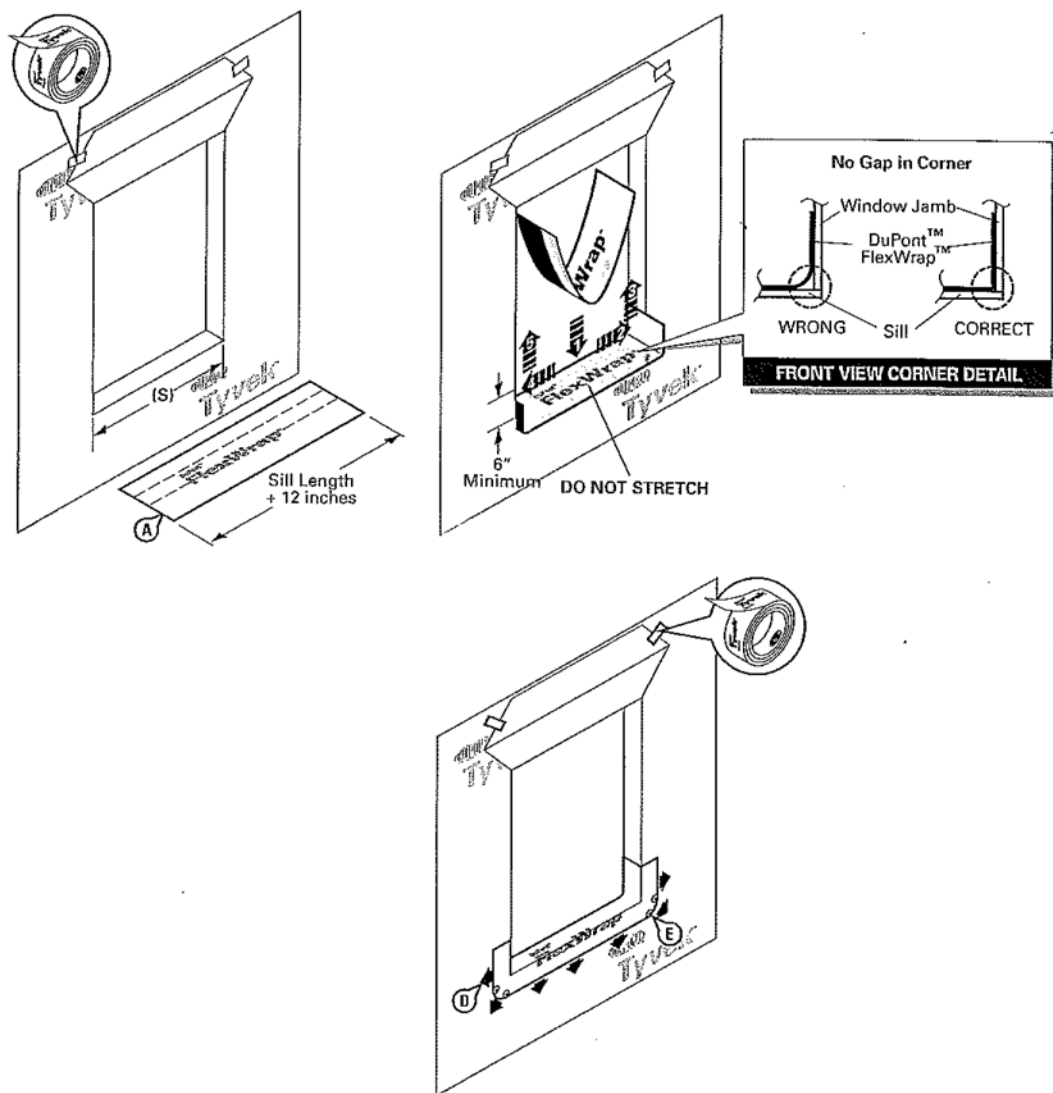
Note: Side flaps should cover interior facing framing stud.



STEP 2 (optional / not required)

- A. Cut DuPont™ FlexWrap™ at least 12" longer than width of rough opening sill (S).
- B. Remove first piece of release paper, cover horizontal sill by aligning inside edge of sill, and adhere into rough opening along sill and up jambs (min. 6" on each side).
- C. Remove second release paper.
- D. Flex DuPont™ FlexWrap™ at bottom corners onto face of wall.
- E. **SECURE EDGES OF DUPONT™ FLEXWRAP™ WITH MECHANICAL FASTENERS.** i.e., DuPont™ Tyvek® Wrap Caps (nails, screws, staples).

Note: Secure fastener along the bottom outer edge of the DuPont™ FlexWrap™ at flexed corners.

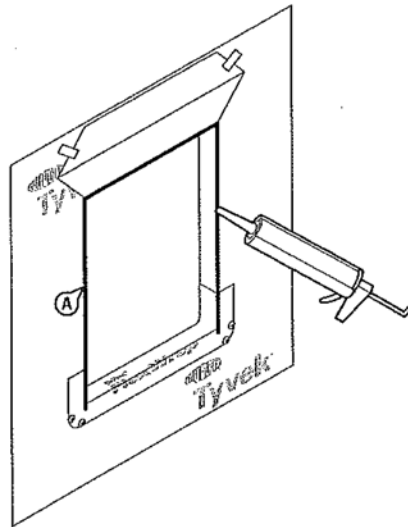


DuPont™ Flashing Systems Installation Guidelines

STEP 3

- A. Apply continuous bead of caulk at the window head and jambs to wall or back side of window mounting flange.

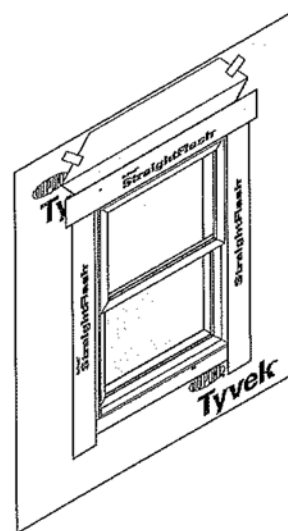
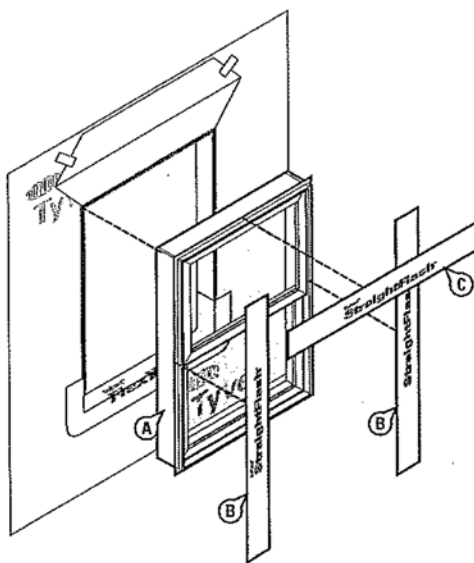
DO NOT APPLY CAULK ACROSS BOTTOM SILL FLANGE to allow for drainage.



FOR RECTANGULAR WINDOWS

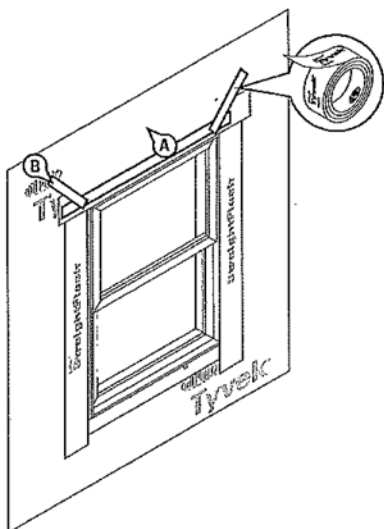
STEP 4

- A. Install window according to manufacturer's instructions.
- B. Cut two pieces of DuPont™ StraightFlash™ or DuPont™ FlexWrap™ for jamb flashing extending 1" above window head flange and below bottom edge of sill flashing. Remove release paper and press tightly along sides of window frame.
- C. Cut a piece of DuPont™ StraightFlash™ or DuPont™ FlexWrap™ for head flashing, which extends beyond outer edges of jamb flashings. Remove release paper and install completely covering mounting flange and adhering to exposed sheathing or framing members. (see C)



STEP 5

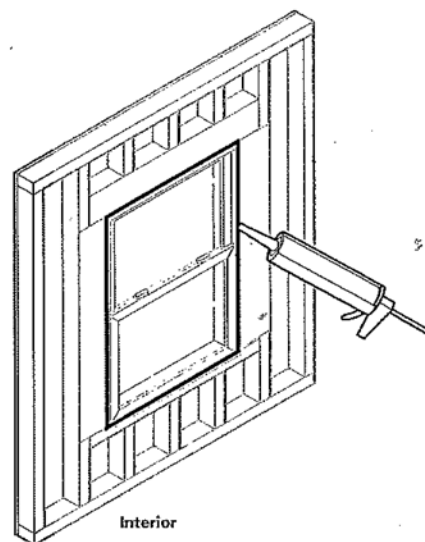
- A. Flip down upper flap of water-resistive barrier so it lays flat across head flashing.
- B. Tape along all cuts in water-resistive barrier and tape across head of the window with DuPont™ Tyvek® Tape.



STEP 6 (optional / not required)

Final Step

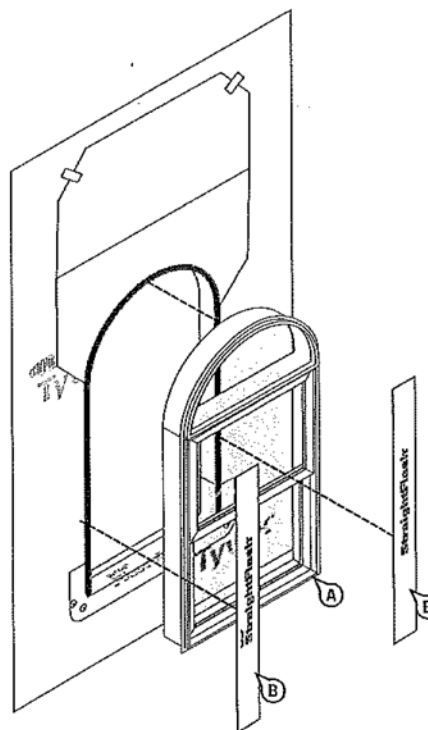
Seal around the window opening at the interior, using caulk (and backer rod as necessary). Caulk and backer rod will also serve as a back dam.



FOR ROUNDTOP WINDOWS

STEP 4

- A. Install window according to manufacturer's instructions.
- B. Cut two pieces of DuPont™ StraightFlash™ or DuPont™ FlexWrap™ for jamb flashing extending 1" above window head flange and below bottom edge of sill flashing. Remove release paper and press tightly along sides of window frame.

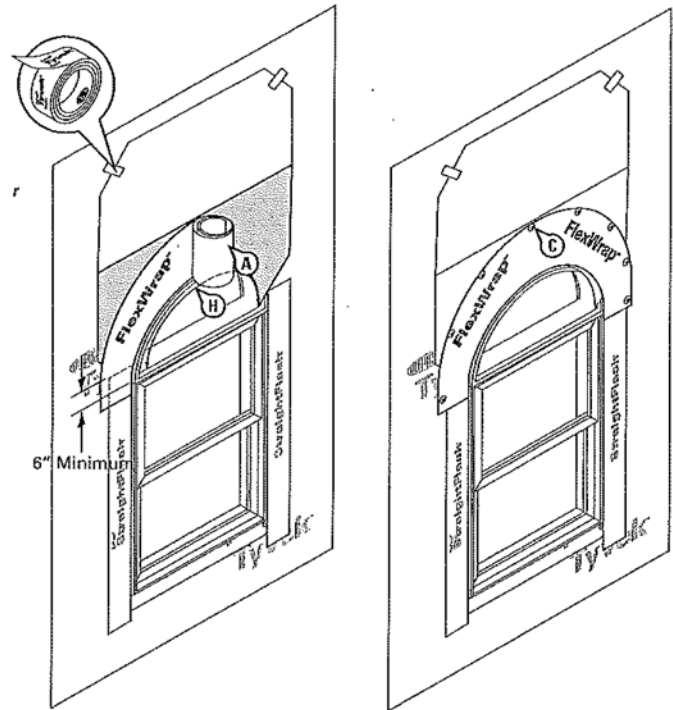


DuPont™ Flashing Systems Installation Guidelines

STEP 5

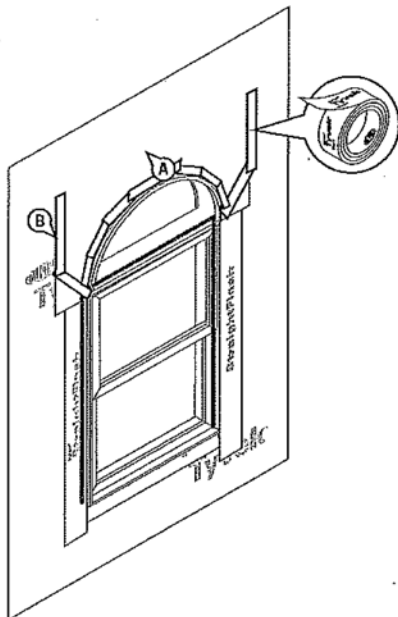
Install head flashing

- Cut head flashing at least 12" longer than the arc length (H) of round-top window.
- Remove both release papers and install to conform around top of window, covering entire mounting flange and adhering to exposed sheathing or framing members. Head flashing should overlap jamb flashings at least 6".
- Secure outer edges of head flashing using mechanical fasteners. e.g. DuPont™ Tyvek® Wrap Caps (nails, screws, staples). SECURE every 6" to 12" along outer perimeter.



STEP 6

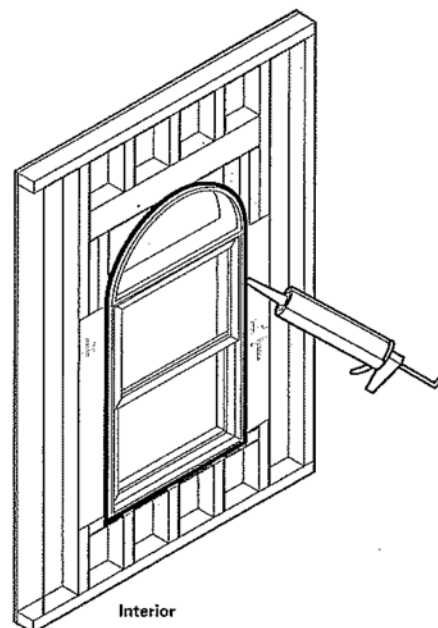
- Flip down upper flap of WRB so it lays flat across head flashing.
- Tape along all cuts in WRB and across head of the window with DuPont™ Tyvek® Tape.



STEP 7

Final Step

Seal around the window opening at the interior, using caulk (and backer rod as necessary). Caulk and backer rod will also serve as a back dam.





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Single Hung Operating Instructions

- 1) Make sure the sash is unlocked.
- 2) At this point, the bottom sash will be able to be raised freely.
- 3) To clean: (use a mild soap and water on frames and any standard glass cleaner on glass. DO NOT use any kind of harsh cleaner on the vinyl frames and sashes. Use of such products can cause damage to the vinyl and WILL void the warranty.)
 - a. Raise the bottom sash up at least 2" (failure to do so will result in a damaged window and such damage will not be covered under warranty)
 - b. At the top corners of the sash there are spring loaded tilt latches. Pull in, towards the center of the window, on the tilt latches, and hold them.
 - c. While holding the tilt latches in the unlocked position, gently pull the sash towards you for cleaning and release the tilt latches.
 - d. When finished cleaning, simply tilt the bottom sash back up into place and push to automatically engage the tilt latches, then lower the sash all the way back into place.
 - e. Make sure to reengage the sash locks for security.
- 4) If at any time the sash does not travel up and down freely, DO NOT force it. It should travel relatively easily. Occasionally during cleaning, the sash will become "locked out". Simply re-tilt the sash, down passed 90 degrees, then re-tilt it back up into position. The balance system on the window is self-correcting. IF this does not correct the issue, then call the main office at (757)887-3194 and ask to speak to our Service Manager for further assistance.