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VEKA INC.
TEST REPORT

SCOPE OF WORK
AAMA/WDMA/CSA 101/I.S.2/A440-08 AND -11 TESTING ON SH46/57W PVC FIXED WINDOW

REPORT NUMBER
H3964.01-501-47 R0

TEST DATE(S)
07/19/17 - 09/12/17

ISSUE DATE
09/26/17

RECORD RETENTION END DATE
08/23/21

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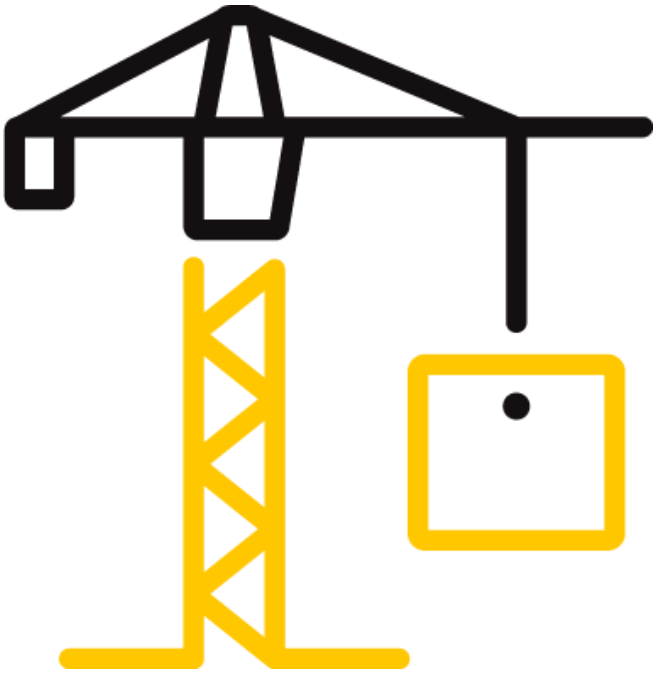

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TEST REPORT FOR VEKA INC.
Report No.: H3964.01-501-47 R0
Date: 09/26/17

REPORT ISSUED TO
VEKA INC.
100 Veka Drive
Fombell, PA 16123-0250

SECTION 1
SCOPE

Intertek Building & Construction (B&C) was contracted by VEKA, INC., Fombell, Pennsylvania to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights* AND AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*, on their SH46/57W PVC Fixed Window. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Veka Inc. test facility in Fombell, Pennsylvania. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2
SUMMARY OF TEST RESULTS

For INTERTEK B&C:

COMPLETED BY:	Zachary Miller	**REVIEWED BY:**	Joseph Allison
TITLE:	Technician – Building & Construction	**TITLE:**	Laboratory Supervisor
SIGNATURE:	Digitally Signed by: Zachary Miller	**SIGNATURE:**	Digitally Signed by: Joseph E. Allison
DATE:	09/26/17	**DATE:**	09/26/17

JEA:sld

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SECTION 3
SUMMARY OF TEST RESULTS

TITLE	TEST SPECIMEN #1	TEST SPECIMEN #2
AAMA/WDMA/CSA 101/I.S.2/A440-08 and -11	Class LC-PG40 1422 x 1422 (56 x 56) - Type FW	Class R-PG45 1372 x 2438 (54 x 96) - Type FW
Design Pressure	+1920 Pa (+40.10 psf)	+2160 Pa (+45.11 psf)
Negative Design Pressure	-2160 Pa (-45.11 psf)	-2160 Pa (-45.11 psf)
Air Infiltration	<0.1 L/s/m^2 (<0.01 cfm/ft^2)	<0.1 L/s/m^2 (<0.01 cfm/ft^2)
Canadian Air Infiltration/Exfiltration Level	Fixed	Fixed
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)	360 Pa (7.52 psf)

TITLE	TEST SPECIMEN #3
AAMA/WDMA/CSA 101/I.S.2/A440-08 and -11	Class LC-PG40 1829 x 2083 (72 x 82) - Type FW
Design Pressure	+1920 Pa (+40.10 psf)
Negative Design Pressure	-1920 Pa (-40.10 psf)
Air Infiltration	<0.1 L/s/m^2 (<0.01 cfm/ft^2)
Canadian Air Infiltration/Exfiltration Level	Fixed
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)

SECTION 4
TEST METHOD(S)

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*

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

AAMA 205-15, *In-Plant Testing Guidelines for Manufacturers and Independent Laboratories*

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SECTION 5
MATERIAL SOURCE/INSTALLATION

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

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 window was sealed with silicone sealant. Installation of the tested product was performed by the client.

LOCATION	ANCHOR DESCRIPTION	ANCHOR LOCATION
Integral nail fin	#8 x 2" drywall screw	Nominally spaced at 8" on center, and beginning in each corner

SECTION 6
EQUIPMENT

Calibration of test equipment was performed by Intertek B&C in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories"

SECTION 7
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Doug Merry	VEKA INC.
Cornell Charles	VEKA INC.
Joseph Allison	Intertek B&C

SECTION 8
GATEWAY

Reference Intertek B&C Report No. H3964.01-501-47, dated 09/26/17 for complete *Gateway* test specimen description and test results.

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SECTION 9
TEST SPECIMEN DESCRIPTION

Product Type: PVC Fixed Window
Series/Model: PI58W

Product Size(s):

Test Specimen #1

OVERALL AREA:	**WIDTH**		**HEIGHT**	
2.0 m² (21.8 ft²)	**millimeters**	**inches**	**millimeters**	**inches**
Overall size	1422	56	1422	56

Test Specimen #2

OVERALL AREA:	**WIDTH**		**HEIGHT**	
3.3 m² (36.0 ft²)	**millimeters**	**inches**	**millimeters**	**inches**
Overall size	1372	54	2438	96

Test Specimen #3

OVERALL AREA:	**WIDTH**		**HEIGHT**	
3.8 m² (41.0 ft²)	**millimeters**	**inches**	**millimeters**	**inches**
Overall size	1829	72	2083	82

The following descriptions apply to all specimens.

Frame Construction:

FRAME MEMBER	**MATERIAL**	**DESCRIPTION**
Head, sill, and jambs	PVC	Extruded
	JOINERY TYPE	**DETAIL**
All corners	Mitered	Thermally welded

Reinforcement: *No reinforcement was utilized.*

Weatherstripping: *No weatherstripping was utilized.*

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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.*
Test specimen #1:

GLASS TYPE	SPACER TYPE	INTERIOR LITE	EXTERIOR LITE	GLAZING METHOD
13/16" IG	"U" shaped steel, single sealed	1/8" annealed	1/8" annealed	The glass was set from the interior against a double-sided adhesive tape and secured with rigid vinyl glazing beads. An interior heal bead of silicone was applied at the sill and 4" up each jamb.

Test specimens #2 and #3:

GLASS TYPE	SPACER TYPE	INTERIOR LITE	EXTERIOR LITE	GLAZING METHOD
3/4" IG	"U" shaped steel, single sealed	3/16" annealed	3/16" annealed	The glass was set from the interior against a double-sided adhesive tape and secured with rigid vinyl glazing beads. An interior heal bead of silicone was applied at the sill and 4" up each jamb.

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Specimen #1 frame	1	1311 x 1311	51-5/8 x 51-5/8	1/2"
Specimen #2 frame	1	1260 x 2327	49-5/8 x 91-5/8	1/2"
Specimen #3 frame	1	1718 x 1972	67-5/8 x 77-5/8	1/2"

Drainage:

DRAINAGE METHOD	SIZE	QUANTITY	LOCATION
Weepslot with flap	1" wide by 1/4" high	2	Exterior sill face, one 3" from each end
Weepslot	1" wide by 5/16" high	2	Intermediate sill walls, one at each end
Weephole	1/4" diameter	2	Sill glazing track, one at each end

Hardware: *No hardware was utilized.*

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SECTION 10
TEST RESULTS

The temperature during testing was 26°C (78°F). The results are tabulated as follows:

Test Specimen #1:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m^2 (<0.01 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.	1
Air Leakage, Exfiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m^2 (<0.01 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.	1
Canadian Air Infiltration/Exfiltration Level	Fixed	N/A	
Water Penetration, per ASTM E547	N/A	N/A	4
Uniform Load Deflection, per ASTM E330	N/A	N/A	4
Uniform Load Structural, per ASTM E330	N/A	N/A	4
Forced Entry Resistance, per ASTM F588, Type: D - Grade: 40	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
OPTIONAL PERFORMANCE			
Water Penetration, per ASTM E547 at 360 Pa (7.52 psf)	Pass	No leakage	3
Uniform Load Deflection, per ASTM E330 Deflections taken at the right jamb +1920 Pa (+40.10 psf) -2160 Pa (-45.11 psf)	 1.0 mm (0.04") 0.8 mm (0.03")	 Report only	 5, 6, 7
Uniform Load Structural, per ASTM E330 Permanent set taken at the right jamb +2880 Pa (+60.15 psf) -3240 Pa (-67.67 psf)	 0.3 mm (0.01") 0.3 mm (0.01")	 0.8 mm (0.03") max. 0.8 mm (0.03") max.	 6, 7

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Test Specimen #2:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m^2 (<0.01 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.	1
Air Leakage, Exfiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m^2 (<0.01 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.	1
Canadian Air Infiltration/Exfiltration Level	Fixed	N/A	
Water Penetration, per ASTM E547	N/A	N/A	4
Uniform Load Deflection, per ASTM E330	N/A	N/A	4
Uniform Load Structural, per ASTM E330	N/A	N/A	4
Forced Entry Resistance, per ASTM F588, Type: D - Grade: 40	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
OPTIONAL PERFORMANCE			
Water Penetration, per ASTM E547 at 360 Pa (7.52 psf)	Pass	No leakage	3
Uniform Load Deflection, per ASTM E330 Deflections taken at the right jamb +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	 1.3 mm (0.05") 0.5 mm (0.02")	 Report only	 5, 6, 7
Uniform Load Structural, per ASTM E330 Permanent set taken at the right jamb +3240 Pa (+67.67 psf) -3240 Pa (-67.67 psf)	 0.3 mm (0.01") 0.3 mm (0.01")	 0.8 mm (0.03") max. 0.8 mm (0.03") max.	 6, 7

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Test Specimen #3:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m^2 (<0.01 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.	1
Air Leakage, Exfiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m^2 (<0.01 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.	1
Canadian Air Infiltration/Exfiltration Level	Fixed	N/A	
Water Penetration, per ASTM E547	N/A	N/A	4
Uniform Load Deflection, per ASTM E330	N/A	N/A	4
Uniform Load Structural, per ASTM E330	N/A	N/A	4
Forced Entry Resistance, per ASTM F588, Type: D - Grade: 40	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
OPTIONAL PERFORMANCE			
Water Penetration, per ASTM E547 at 360 Pa (7.52 psf)	Pass	No leakage	3
Uniform Load Deflection, per ASTM E330 Deflections taken at the right jamb +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	 0.5 mm (0.02") 0.5 mm (0.02")	 Report only	 5, 6, 7
Uniform Load Structural, per ASTM E330 Permanent set taken at the right jamb +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	 0.3 mm (0.01") 0.5 mm (0.02")	 0.8 mm (0.03") max. 0.8 mm (0.03") max.	 6, 7

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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 08/04/17 (Air Note Only)

Note 3: Without insect screen.

Note 4: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 5: 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 6: Loads were held for 10 seconds.

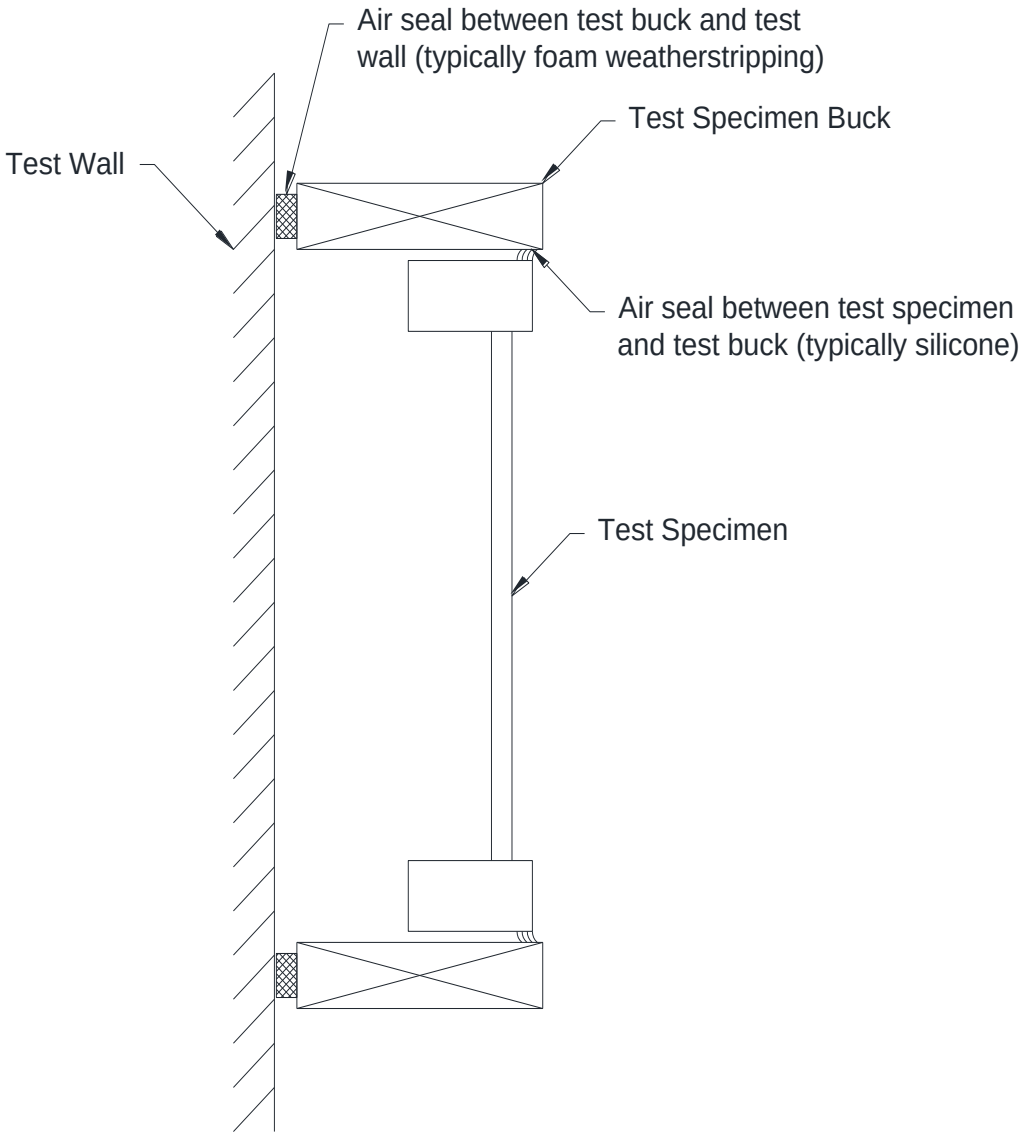
Note 7: Tape and film were not used to seal against air leakage during structural testing.

SECTION 11
ALTERATIONS

No alterations were required.

SECTION 12
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.



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SECTION 13
CONCLUSION

The specimens tested successfully met the performance requirements for the following ratings:

TEST SPECIMEN(S)	TITLE	SUMMARY OF RESULTS
1	101/I.S.2/A440-08 and -11	Class LC-PG40 1422 x 1422 (56 x 56) - Type FW
2	101/I.S.2/A440-08 and -11	Class R-PG45 1372 x 2438 (54 x 96) - Type FW
3	101/I.S.2/A440-08 and -11	Class LC-PG40 1829 x 2083 (72 x 82) - Type FW

Reference Intertek-ATI Report No. H3964.01-501-47-R0, dated 09/26/17 for complete *Gateway* test specimen description and test results.

***General Note**: An asterisk (*) next to the size designation indicates that the size tested for optional performance was smaller than the Gateway test size for the product type and class.*

SECTION 14
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 on file with Intertek B&C. Any deviations are documented herein or on the drawings.

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

BILL OF MATERIALS
WELDED PICTURE WINDOW (SH46W)

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.

PVC PROFILES:	PART #	# PER UNIT	SOURCE
FRAME	SH4602	4	VEKA
or	SH4601	4	VEKA
GLAZING BEAD (3/4" GLASS)	V-716	4	VEKA
(3/4" GLASS)	BV162	4	VEKA
(5/8" GLASS)	V-722	4	VEKA
FRAME INFILL (W/SH4601)	UV08	4	VEKA
HARDWARE:			
WEEP HOLE COVER	110-2562**		Ro-Mai
GLAZING:			
DOUBLE FACE 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
	1/16" x 1/2"	A/R	H.O. PRODUCTS
GLAZING SHIMS (3/4" GLASS)	3/4" x 3/4" x 1/8"	A/R	TREMCO
	3/4" x 3/4" x 1/8"	A/R	H.O. PRODUCTS
LIQUID BACK BEDDING (SILICONE)	SBC1M150	A/R	NOVAGUARD
	896	A/R	PECORA
	5733	A/R	SCHNEE MOREHEAD
	899	A/R	DOW CORNING

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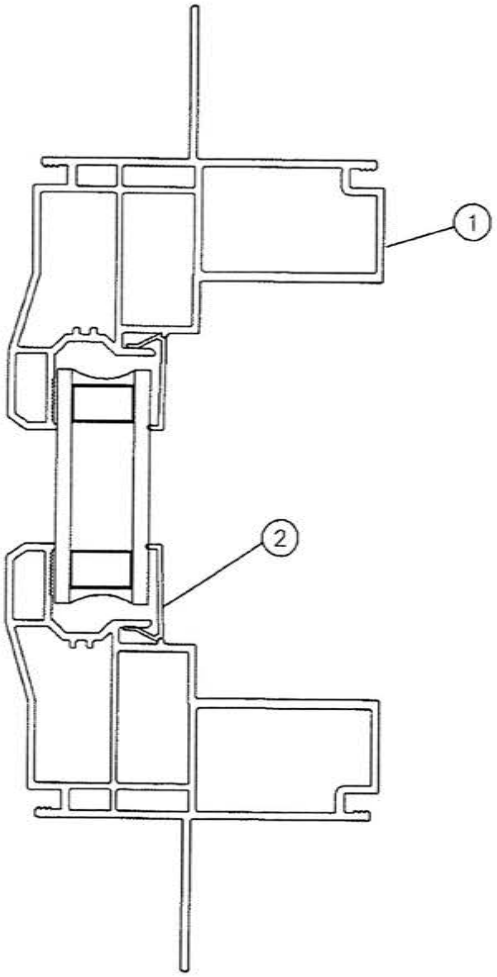
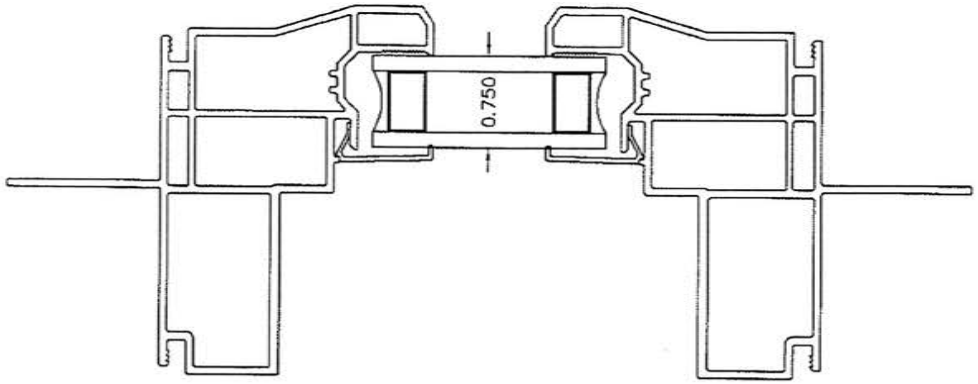
** = COLOR
A/R = AS REQUIRED

09/25/17





VINYL EXTRUSIONS

1	SH4602	FRAME HEAD,JAMB,SILL
2	BV162	GLAZING BEAD

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REV	ECN.	CHANGE	BY	DATE
A	XXXX	UPDATED PROFILE SH5702 TOR#0517-002	BJF	09/13/17

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VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DESCRIPTION: SH46W SERIES
PICTURE WINDOW LAYOUT

B-SIZE | BY: BJF | DATE: 06/13/13

SCALE: FULL

DWG # SH46WBV162
DED HD

SH46WBV162

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SECTION 15
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	09/26/17	N/A	Original Report Issue