

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

(Revised)

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

**SERIES/MODEL:
SHA4WW Single Hung (Equal/Unequal)**

Report Number: H1555.03-116-45
Original Report Date: 7/11/2017
Revised Report Date: 9/6/2017

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

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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 7.4.4
Center-of-Glass Modeling: WINDOW 7.4.14
Total Product Calculations: WINDOW 7.4.14
Spectral Data Library: IGDB 55.0

Simulations Specimen Description:

Series/Model: SHA4WW Single Hung (Equal/Unequal)
Type: Vertical Slider, Single Hung
Frame Material: VI Vinyl w/ Reinforcement - Interlock
Sash Material: VA Vinyl w/ All Members Reinforced
Standard Size: 1200mm x 1500mm

Modeling Assumptions/Technical Interpretations:

- 1) To prevent air infiltration, tape was applied to all interior sash crack locations.
- 2) All Dividers were grouped. The 5.5mm x 25mm was the leader.
- 3) Equal and Unequal lite versions are simulated separately in the report.

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 7.4.14. 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.

Equal Lite	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.003964	0.006736	0.009349
SHGC1	0.777137	0.695740	0.619021
VT0	0.000000	0.000000	0.000000
VT1	0.773173	0.689004	0.609672
Unequal Lite	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.004446	0.007187	0.009769
SHGC1	0.760832	0.680356	0.604560
VT0	0.000000	0.000000	0.000000
VT1	0.756385	0.673169	0.594791

$$SHGC = SHGC0 + SHGCc (SHGC1 - SHGC0)$$

$$VT = VT0 + VTc (VT1 - VT0)$$

Validation Matrix:

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

Product Line	Report Number
None	-

Spacer Option Description

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

Reinforcement Option Description

<i>Location</i>	<i>Material</i>
All Sash Members	Aluminum

Gas Filling Technique Description

<i>Fill Type</i>	<i>Method</i>
90% Argon	Single or Dual Probe

Edge-of-Glass Construction

<i>Interior Condition</i>	Active: Silicone between frame leg and glass, Fixed: PVC glazing bead
<i>Exterior Condition</i>	Active: PVC glazing bead against glass, Fixed: Silicone between frame

Weatherstripping

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Finpile	1 row	Operable sash perimeter, interlocks
Finpile	1 row	Bottom Rail
Vinyl Bulb	1 row	Sill Frame

Frame/Sash Materials Finish

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

NFRC 100/200/500 Summary Sheet SHA4WW Single Hung (Equal/Unequal)

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)					Grids (None / <1 / >=1)			
1	Equal Lite, No Reinforcing: E366/ Arg / Clear / Arg / E180 - (SS/SS) 1-18"											
	0.087	0.410	0.087	0.410	0.087			ARG90	0.022(#2) / 0.068(#5)		CL	SS-D N,S
	U-Factor 0.20			SHGC (N / <1 / >1) 0.20 / 0.18 / 0.16					VT (N / <1 / >1) 0.45 / 0.40 / 0.35		CR	69
2	Equal Lite, No Reinforcing: E366/ Arg / Clear / Arg / E180 - (SS/SS) 1-18"											
	0.087	0.410	0.087	0.410	0.087			ARG90	0.022(#2) / 0.068(#5)		CL	SS-D G
	U-Factor 0.20			SHGC (<1 / >1) 0.18 / 0.16					VT (<1 / >1) 0.40 / 0.35		CR	69
3	Equal Lite, No Reinforcing: E366/ Arg / Clear / Arg / E180 - (DS/DS) 1-18"											
	0.117	0.375	0.118	0.375	0.118			ARG90	0.022(#2) / 0.068(#5)		CL	SS-D N,S
	U-Factor 0.20			SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.44 / 0.39 / 0.35		CR	62
4	Equal Lite, No Reinforcing: E366/ Arg / Clear / Arg / E180 - (DS/DS) 1-18"											
	0.117	0.375	0.118	0.375	0.118			ARG90	0.022(#2) / 0.068(#5)		CL	SS-D G
	U-Factor 0.21			SHGC (<1 / >1) 0.18 / 0.16					VT (<1 / >1) 0.39 / 0.35		CR	62
5	Equal Lite, No Reinforcing: E366/ Arg / Clear (SS/SS) 3/4"											
	0.087	0.563	0.087					ARG90	0.022(#2)		CL	SS-D N,G
	U-Factor 0.28			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.18					VT (N / <1 / >1) 0.51 / 0.45 / 0.40		CR	59
6	Equal Lite, No Reinforcing: E366/ Arg / Clear (DS/DS) 3/4"											
	0.117	0.500	0.118					ARG90	0.022(#2)		CL	SS-D N,G
	U-Factor 0.28			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.18					VT (N / <1 / >1) 0.50 / 0.45 / 0.39		CR	59
7	Equal Lite, No Reinforcing: E270/ Arg / Clear (SS/SS) 3/4"											
	0.087	0.563	0.087					ARG90	0.037(#2)		CL	SS-D N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.29 / 0.26 / 0.23					VT (N / <1 / >1) 0.55 / 0.49 / 0.43		CR	59
8	Equal Lite, No Reinforcing: E270/ Arg / Clear (DS/DS) 3/4"											
	0.118	0.500	0.118					ARG90	0.037(#2)		CL	SS-D N,G
	U-Factor 0.28			SHGC (N / <1 / >1) 0.29 / 0.26 / 0.23					VT (N / <1 / >1) 0.54 / 0.48 / 0.43		CR	59
9	Equal Lite, No Reinforcing: E366/ Arg / Clear (5mm/6mm) 1-1/8"											
	0.187	0.688	0.224					ARG90	0.022(#2)		CL	SS-D N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.49 / 0.44 / 0.39		CR	57
10	Equal Lite, No Reinforcing: E270/ Arg / Clear (5mm/6mm) 1-1/8"											
	0.197	0.688	0.224					ARG90	0.037(#2)		CL	SS-D N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.23					VT (N / <1 / >1) 0.53 / 0.47 / 0.42		CR	57

NFRC 100/200/500 Summary Sheet SHA4WW Single Hung (Equal/Unequal)

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)					Grids (None / <1 / >=1)			
11	Equal Lite, No Reinforcing: E366/ Arg / Lami (6mm/6mm Lami) 1-1/8"											
	0.225	0.656	0.241					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.49 / 0.43 / 0.38		CR 58	
12	Equal Lite, No Reinforcing: E270/ Arg / Lami (6mm/6mm Lami) 1-1/8"											
	0.236	0.656	0.241					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.22					VT (N / <1 / >1) 0.52 / 0.47 / 0.41		CR 58	
13	Equal Lite, Reinforcing: E366/ Arg / Clear / Arg / E180 - (SS/SS) 1-18"											
	0.087	0.410	0.087	0.410	0.087			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	N,S
	U-Factor 0.20			SHGC (N / <1 / >1) 0.20 / 0.18 / 0.16					VT (N / <1 / >1) 0.45 / 0.40 / 0.35		CR 66	
14	Equal Lite, Reinforcing: E366/ Arg / Clear / Arg / E180 - (SS/SS) 1-18"											
	0.087	0.410	0.087	0.410	0.087			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	G
	U-Factor 0.21			SHGC (<1 / >1) 0.18 / 0.16					VT (<1 / >1) 0.40 / 0.35		CR 66	
15	Equal Lite, Reinforcing: E366/ Arg / Clear / Arg / E180 - (DS/DS) 1-18"											
	0.117	0.375	0.118	0.375	0.118			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	N,S
	U-Factor 0.21			SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.44 / 0.39 / 0.35		CR 60	
16	Equal Lite, Reinforcing: E366/ Arg / Clear / Arg / E180 - (DS/DS) 1-18"											
	0.117	0.375	0.118	0.375	0.118			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	G
	U-Factor 0.22			SHGC (<1 / >1) 0.18 / 0.16					VT (<1 / >1) 0.39 / 0.35		CR 60	
17	Equal Lite, Reinforcing: E366/ Arg / Clear (SS/SS) 3/4"											
	0.087	0.563	0.087					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.18					VT (N / <1 / >1) 0.51 / 0.45 / 0.40		CR 59	
18	Equal Lite, Reinforcing: E366/ Arg / Clear (DS/DS) 3/4"											
	0.117	0.500	0.118					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.18					VT (N / <1 / >1) 0.50 / 0.45 / 0.39		CR 59	
19	Equal Lite, Reinforcing: E270/ Arg / Clear (SS/SS) 3/4"											
	0.087	0.563	0.087					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.29 / 0.26 / 0.23					VT (N / <1 / >1) 0.55 / 0.49 / 0.43		CR 59	
20	Equal Lite, Reinforcing: E270/ Arg / Clear (DS/DS) 3/4"											
	0.118	0.500	0.118					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.29 / 0.26 / 0.23					VT (N / <1 / >1) 0.54 / 0.48 / 0.43		CR 58	

NFRC 100/200/500 Summary Sheet SHA4WW Single Hung (Equal/Unequal)

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)					Grids (None / <1 / >=1)			
21	Equal Lite, Reinforcing: E366/ Arg / Clear (5mm/6mm) 1-1/8"											
	0.187	0.688	0.224					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.49 / 0.44 / 0.39		CR 57	
22	Equal Lite, Reinforcing: E270/ Arg / Clear (5mm/6mm) 1-1/8"											
	0.197	0.688	0.224					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.23					VT (N / <1 / >1) 0.53 / 0.47 / 0.42		CR 57	
23	Equal Lite, Reinforcing: E366/ Arg / Lami (6mm/6mm Lami) 1-1/8"											
	0.225	0.656	0.241					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.49 / 0.43 / 0.38		CR 58	
24	Equal Lite, Reinforcing: E270/ Arg / Lami (6mm/6mm Lami) 1-1/8"											
	0.236	0.656	0.241					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.22					VT (N / <1 / >1) 0.52 / 0.47 / 0.41		CR 58	
25	Unequal Lite, No Reinforcing: E366/ Arg / Clear / Arg / E180 - (SS/SS) 1-18"											
	0.087	0.410	0.087	0.410	0.087			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	N,S
	U-Factor 0.20			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.44 / 0.39 / 0.34		CR 67	
26	Unequal Lite, No Reinforcing: E366/ Arg / Clear / Arg / E180 - (SS/SS) 1-18"											
	0.087	0.410	0.087	0.410	0.087			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	G
	U-Factor 0.21			SHGC (<1 / >1) 0.17 / 0.16					VT (<1 / >1) 0.39 / 0.34		CR 67	
27	Unequal Lite, No Reinforcing: E366/ Arg / Clear / Arg / E180 - (DS/DS) 1-18"											
	0.117	0.375	0.118	0.375	0.118			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	N,S
	U-Factor 0.21			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.43 / 0.38 / 0.34		CR 67	
28	Unequal Lite, No Reinforcing: E366/ Arg / Clear / Arg / E180 - (DS/DS) 1-18"											
	0.117	0.375	0.118	0.375	0.118			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	G
	U-Factor 0.22			SHGC (<1 / >1) 0.17 / 0.16					VT (<1 / >1) 0.38 / 0.34		CR 67	
29	Unequal Lite, No Reinforcing: E366/ Arg / Clear (SS/SS) 3/4"											
	0.087	0.563	0.087					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.50 / 0.44 / 0.39		CR 59	
30	Unequal Lite, No Reinforcing: E366/ Arg / Clear (DS/DS) 3/4"											
	0.117	0.500	0.118					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.28			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.49 / 0.44 / 0.39		CR 58	

NFRC 100/200/500 Summary Sheet SHA4WW Single Hung (Equal/Unequal)

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)					Grids (None / <1 / >=1)			
31	Unequal Lite, No Reinforcing: E270/ Arg / Clear (SS/SS) 3/4"											
	0.087	0.563	0.087					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.28 / 0.26 / 0.23					VT (N / <1 / >1) 0.54 / 0.48 / 0.42		CR 59	
32	Unequal Lite, No Reinforcing: E270/ Arg / Clear (DS/DS) 3/4"											
	0.118	0.500	0.118					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.23					VT (N / <1 / >1) 0.53 / 0.47 / 0.42		CR 58	
33	Unequal Lite, No Reinforcing: E366/ Arg / Clear (5mm/6mm) 1-1/8"											
	0.187	0.688	0.224					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.48 / 0.43 / 0.38		CR 57	
34	Unequal Lite, No Reinforcing: E270/ Arg / Clear (5mm/6mm) 1-1/8"											
	0.197	0.688	0.224					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.27 / 0.25 / 0.22					VT (N / <1 / >1) 0.52 / 0.46 / 0.41		CR 56	
35	Unequal Lite, No Reinforcing: E366/ Arg / Lami (6mm/6mm Lami) 1-1/8"											
	0.225	0.656	0.241					ARG90	0.022(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.47 / 0.42 / 0.37		CR 57	
36	Unequal Lite, No Reinforcing: E270/ Arg / Lami (6mm/6mm Lami) 1-1/8"											
	0.236	0.656	0.241					ARG90	0.037(#2)	CL	SS-D	N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.27 / 0.24 / 0.22					VT (N / <1 / >1) 0.51 / 0.46 / 0.40		CR 57	
37	Unequal Lite, Reinforcing: E366/ Arg / Clear / Arg / E180 - (SS/SS) 1-18"											
	0.087	0.410	0.087	0.410	0.087			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	N,S
	U-Factor 0.22			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.44 / 0.39 / 0.34		CR 61	
38	Unequal Lite, Reinforcing: E366/ Arg / Clear / Arg / E180 - (SS/SS) 1-18"											
	0.087	0.410	0.087	0.410	0.087			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	G
	U-Factor 0.22			SHGC (<1 / >1) 0.17 / 0.16					VT (<1 / >1) 0.39 / 0.34		CR 61	
39	Unequal Lite, Reinforcing: E366/ Arg / Clear / Arg / E180 - (DS/DS) 1-18"											
	0.117	0.375	0.118	0.375	0.118			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	N,S
	U-Factor 0.22			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.43 / 0.38 / 0.34		CR 61	
40	Unequal Lite, Reinforcing: E366/ Arg / Clear / Arg / E180 - (DS/DS) 1-18"											
	0.117	0.375	0.118	0.375	0.118			ARG90	0.022(#2) / 0.068(#5)	CL	SS-D	G
	U-Factor 0.23			SHGC (<1 / >1) 0.17 / 0.16					VT (<1 / >1) 0.38 / 0.34		CR 61	

NFRC 100/200/500 Summary Sheet SHA4WW Single Hung (Equal/Unequal)

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)					Grids (None / <1 / >=1)			
41	Unequal Lite, Reinforcing: E366/ Arg / Clear (SS/SS) 3/4"											
	0.087	0.563	0.087					ARG90	0.022(#2)		CL	SS-D N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.50 / 0.44 / 0.39		CR	59
42	Unequal Lite, Reinforcing: E366/ Arg / Clear (DS/DS) 3/4"											
	0.117	0.500	0.118					ARG90	0.022(#2)		CL	SS-D N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.49 / 0.44 / 0.39		CR	58
43	Unequal Lite, Reinforcing: E270/ Arg / Clear (SS/SS) 3/4"											
	0.087	0.563	0.087					ARG90	0.037(#2)		CL	SS-D N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.28 / 0.26 / 0.23					VT (N / <1 / >1) 0.54 / 0.48 / 0.42		CR	58
44	Unequal Lite, Reinforcing: E270/ Arg / Clear (DS/DS) 3/4"											
	0.118	0.500	0.118					ARG90	0.037(#2)		CL	SS-D N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.23					VT (N / <1 / >1) 0.53 / 0.47 / 0.42		CR	58
45	Unequal Lite, Reinforcing: E366/ Arg / Clear (5mm/6mm) 1-1/8"											
	0.187	0.688	0.224					ARG90	0.022(#2)		CL	SS-D N,G
	U-Factor 0.31			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.48 / 0.43 / 0.38		CR	56
46	Unequal Lite, Reinforcing: E270/ Arg / Clear (5mm/6mm) 1-1/8"											
	0.197	0.688	0.224					ARG90	0.037(#2)		CL	SS-D N,G
	U-Factor 0.31			SHGC (N / <1 / >1) 0.27 / 0.25 / 0.22					VT (N / <1 / >1) 0.52 / 0.46 / 0.41		CR	56
47	Unequal Lite, Reinforcing: E366/ Arg / Lami (6mm/6mm Lami) 1-1/8"											
	0.225	0.656	0.241					ARG90	0.022(#2)		CL	SS-D N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.47 / 0.42 / 0.37		CR	57
48	Unequal Lite, Reinforcing: E270/ Arg / Lami (6mm/6mm Lami) 1-1/8"											
	0.236	0.656	0.241					ARG90	0.037(#2)		CL	SS-D N,G
	U-Factor 0.31			SHGC (N / <1 / >1) 0.27 / 0.24 / 0.22					VT (N / <1 / >1) 0.51 / 0.46 / 0.40		CR	57
49	Equal Lite, No Reinforcing: E366/ Arg / Clear (5mm/6mm) 1"											
	0.187	0.563	0.224					ARG90	0.022(#2)		CL	SS-D N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.49 / 0.44 / 0.39		CR	59
50	Equal Lite, No Reinforcing: E270/ Arg / Clear (5mm/6mm) 1"											
	0.197	0.563	0.224					ARG90	0.037(#2)		CL	SS-D N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.23					VT (N / <1 / >1) 0.53 / 0.47 / 0.42		CR	58

NFRC 100/200/500 Summary Sheet
SHA4WW Single Hung (Equal/Unequal)

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)					Grids (None / <1 / >=1)			
51	Equal Lite, Reinforcing: E366/ Arg / Clear (5mm/6mm) 1"											
	0.187	0.563	0.224					ARG90	0.022(#2)		CL	SS-D / N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.49 / 0.44 / 0.39		CR	58
52	Equal Lite, Reinforcing: E270/ Arg / Clear (5mm/6mm) 1"											
	0.197	0.563	0.224					ARG90	0.037(#2)		CL	SS-D / N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.23					VT (N / <1 / >1) 0.53 / 0.47 / 0.42		CR	58
53	Unequal Lite, No Reinforcing: E366/ Arg / Clear (5mm/6mm) 1"											
	0.187	0.563	0.224					ARG90	0.022(#2)		CL	SS-D / N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.48 / 0.43 / 0.38		CR	58
54	Unequal Lite, No Reinforcing: E270/ Arg / Clear (5mm/6mm) 1"											
	0.197	0.563	0.224					ARG90	0.037(#2)		CL	SS-D / N,G
	U-Factor 0.29			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.22					VT (N / <1 / >1) 0.52 / 0.46 / 0.41		CR	58
55	Unequal Lite, Reinforcing: E366/ Arg / Clear (5mm/6mm) 1"											
	0.187	0.563	0.224					ARG90	0.022(#2)		CL	SS-D / N,G
	U-Factor 0.30			SHGC (N / <1 / >1) 0.21 / 0.19 / 0.17					VT (N / <1 / >1) 0.48 / 0.43 / 0.38		CR	58
56	Unequal Lite, Reinforcing: E270/ Arg / Clear (5mm/6mm) 1"											
	0.197	0.563	0.224					ARG90	0.037(#2)		CL	SS-D / N,G
	U-Factor 0.31			SHGC (N / <1 / >1) 0.28 / 0.25 / 0.22					VT (N / <1 / >1) 0.52 / 0.46 / 0.41		CR	57

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 H1555.01-116-45.

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 19, 2022.

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:

REVIEWED BY:

Allison M. Ford
Simulation Technician

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

AMF:amf
H1555.03-116-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (26)

Revision Log

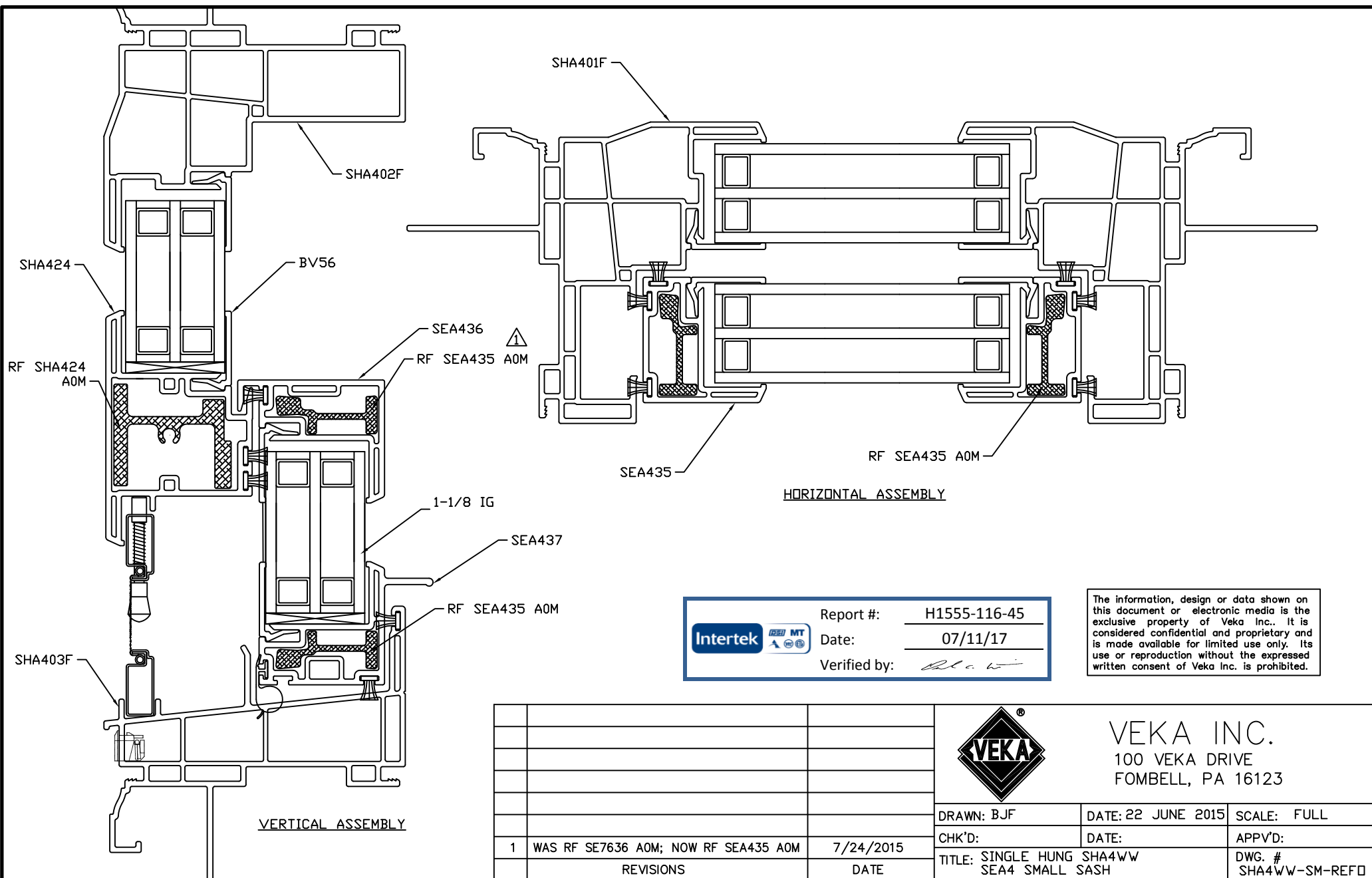
<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01R0	7/21/2017	All	Original report issued to Veka, Inc.
.02R0	7/21/2017	All	Reissue report in the name of Custom Vinyl Products, LLC.
.03R0	9/6/2017	All	Added Options #49-56.

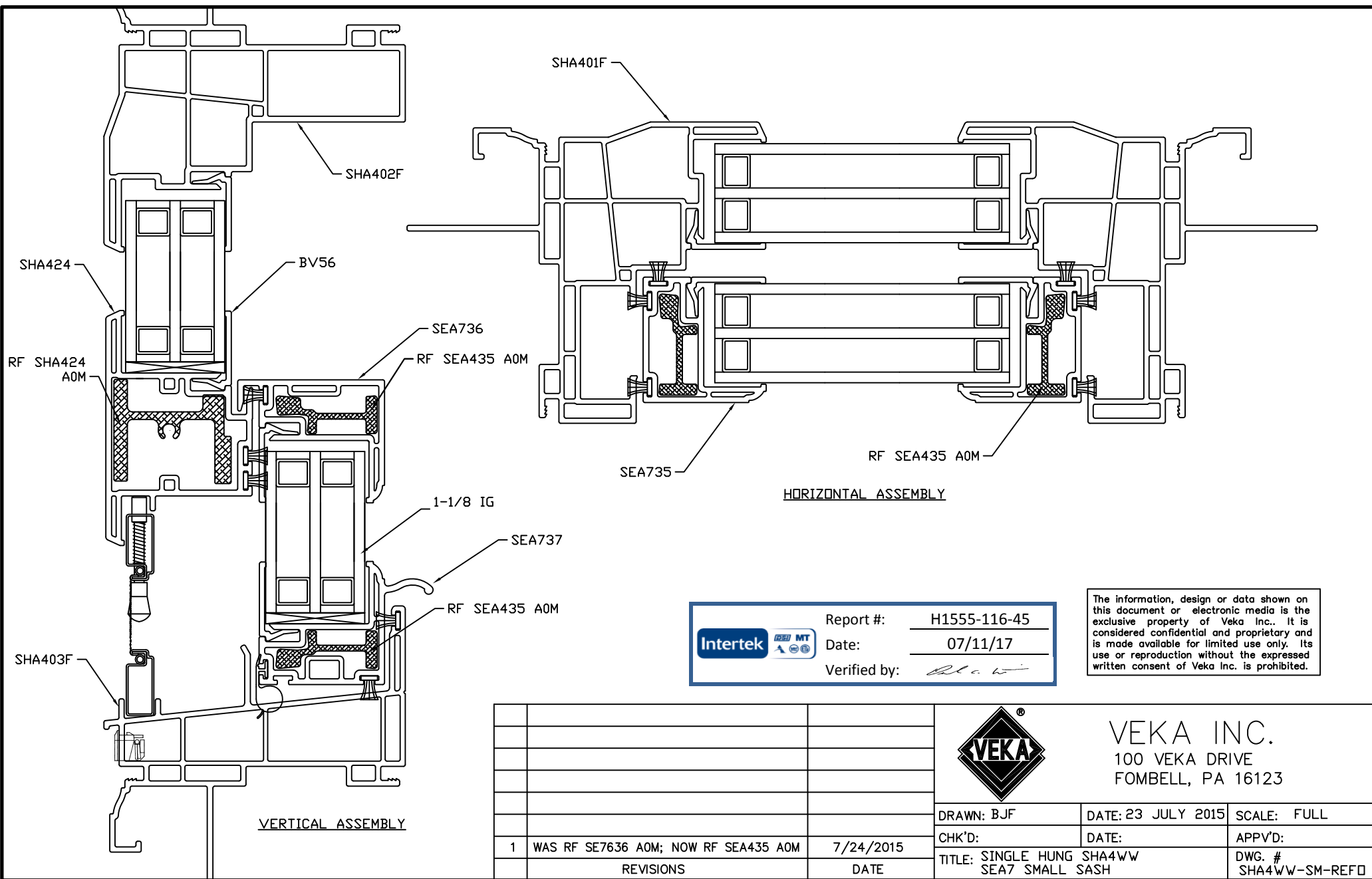


All drawings and Bills of Material used to simulate this product are enclosed in this Appendix
Some drawings may be omitted at the extruder's request.

Appendix A

H1555.03-116-45





Report #: H1555-116-45

Date: 07/11/17

Verified by: *[Signature]*

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