

**CONSTRUCTION CONSULTING LABORATORY**

1601 LUNA ROAD / CARROLLTON, TX 75006

PHONE: 972-242-0556

**CLIENT: POCAHONTAS ALUMINUM COMPANY**2001 Industrial Drive
Pocahontas, AR 72455
Phone: 870-892-3689**CCL REPORT: 25-037R****Report Date: February 21, 2025****Revised: April 5, 2025*****Tracking#: CCL T111407**

PRODUCT TYPE:	PVC Hung Window, Product Drawings, Appendix A
SERIES/MODEL:	Series V21
SPECIFICATION:	AAMA/WDMA/CSA 101/I.S.2/A440-22 (NAFS22)
	AAMA 1701.2-12 / AAMA 1701.2-17
	AAMA 1704-17
CFR Method	24 CFR 3280.403 "Requirements for Windows, Sliding Glass Doors, and Skylights" conducted at wind loads based on CFR 3280.305 (C) (1)
RATING:	R-PG20 914 x 1727 (36" x 68") H
FRAME SIZE:	914 x 1731mm (3' 0" x 5' 8 3/16")
SASH SIZE:	866 x 870mm (2' 10 1/8" x 2' 10 1/4")
FIXED DLO:	845 x 784mm (33 1/4" x 30 7/8")
SASH DLO:	779 x 787mm (30 11/16" x 31.0")
CONFIGURATION:	O/X

AAMA 1704-17 Test Title	Summary of Tests	Results
Egress / Clear Opening	Must meet or exceed >0.55m ² (5Ft ²) opening	Pass
Operating Force	Locks and Latches	<90N (20 Lbs.) Pass
Operating Force	Sash Operation	<90N (20 Lbs.) Pass
Operating Force	Force to Remove Screen	<90N (20 Lbs.) Pass

AAMA 1701.2 Test Title	Summary of Tests	Results
ASTM E 330-21 Uniform Load	1190 Pa (+25 Psf) /- 595 Pa (-12.5 Psf)	Pass
ASTM E 283-19 Air Infiltration	75 Pa (1.57 PSF)	0.09 Cfm/Ft ² - Pass
ASTM E 547-16 Water Resistance	140 Pa (2.92 PSF)	Pass
ASTM E 330-21 Uniform Load	+/- 2770 Pa (58.0 Psf) ^{N1}	Passed
N1: +/- 2770 Pa (+/-58.0 Psf) meets 24-CFR- 3280.403 / 3280.305 (C) (1) for Wind Zone III Corner Zone		

NAFS22 Test Title	Summary of Tests	Results
Product Designator	R PG 20 914 x 1727 (36 x 68) H	Passed
Air Infiltration 75 Pa (1.57 PSF)	(0.45 L/ s•m ² (0.09 cfm/ Ft ²)	Passed
Air Exfiltration -75 Pa (-1.57 PSF)	(0.75 L/ s•m ² (0.15 cfm/ Ft ²)	Passed
Water Resistance	150 Pa (3.13 PSF)	Passed
Uniform Load Deflection	+/-960 Pa (20.05 PSF)	Passed
150% Design Pressure	+/- 1440 Pa (30.08 PSF)	Passed
Forced Entry	Grade 10	Passed
Sash Deglazing	ASTM E 987	Passed

***Revision:**Add AAMA 1701.2-17 test data
Add AAMA 1704-17 test data
Add reference to AAMA 1701.2-12

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

Appendix A: Complete drawings packet on file with the program administrator and Construction Consulting Laboratory



1. PROJECT DATA

1.1. REPORT ISSUED

Pocahontas Aluminum Company Pocahontas, AR 870-892-3689

1.2. TEST LABORATORY

Construction Consulting Laboratory (CCL) Carrollton, Texas 972-242-0556

2. PROJECT SUMMARY

2.1. Project: AAMA/WDMA/CSA 101/I.S.2/A440-22 Performance Testing
 AAMA 1701.2 Primary Window for Manufactured Housing Performance Tests
 AAMA 1704-17 Egress standard

2.2. Series/Model: V21 / PVC Hung

2.3. Compliance Statement: Results obtained are tested values and were secured by using the designated test methods in accordance with the requirements and methods noted in the designated test specification.

2.4. Test Completion: January 30, 2025

2.5. Sample Source: Specimens were manufactured by Pocahontas Aluminum Company and delivered to CCL. CCL installed the specimen under the guidance of the client and performed testing as noted within.

2.6. Record Retention: Reports, drawings, and any project photographs taken will be retained four (4) years from the test completion date.

2.7. Drawing Reference: The appended specimen drawings are representative of the tested specimen.

2.8. Observers:

Witnessed By	Representative (All or Partial Viewing)	
CCL	Sean Eastwood	Edsson Alarcon

3. SPECIFICATIONS / METHODS

- **AAMA/WDMA/CSA 101/I.S.2 /A440-22** “North American Fenestration Standard / Specification for windows, doors, and skylights. (NAFS-22)”
- **AAMA1701.2-12 and 1701.2-17** “Voluntary Standard for Utilization in Manufactured Housing for Primary Windows and Sliding Glass Doors”
- **AAMA1704-17** “Voluntary Standard for Egress Windows Systems for Utilization in Manufactured Housing”
- **24 CFR 3280.403** “Requirements for Windows, Sliding Glass Doors, and Skylights” conducted at wind loads based on CFR 3280.305 (C) (1)

4. SUMMARY

Series	Product Type	Test Size	Design Pressure (DP)	Rating
V21	PVC Hung	3' 0" x 5' 8 ³ / ₁₆ "	+/-960 Pa (20.05 PSF)	DP20
V21	PVC Hung	3' 0" x 5' 8 ³ / ₁₆ "	+/-2770 Pa (58.0 PSF)	See Note
Note: +/- 2770 Pa (+/-58.0 Psf) meets 24-CFR- 3280.403 / 3280.305 (C) (1) for Wind Zone III Corner Zone				



5. TEST SPECIMEN

Product Type:	PVC Hung Window, Product Drawings, Appendix A
Series / Model:	Series V21
Specification:	AAMA/WDMA/CSA 101/I.S.2/A440-22 (NAFS22)
	AAMA 1701.2-17 / AAMA 1701.2-17 / AAMA 1704-17
CFR method	24 CFR 3280.403 "Requirements for Windows, Sliding Glass Doors, and Skylights" conducted at wind loads based on CFR 3280.305 (C) (1)
Rating:	R-PG20 914 x 1727 (36" x 68") H
Frame Size:	914 x 1731mm (3' 0" x 5' 8 ^{3/16} ")
Sash Size:	866 x 870mm (2' 10 ^{1/8} " x 2' 10 ^{1/4} ")
Fixed DLO:	845 x 784mm (33 ^{1/4} " x 30 ^{7/8} ")
Sash DLO:	779 x 787mm (30 ^{11/16} " x 31.0")
Configuration:	O/X

Weather Stripping: Finseal Pile weather strip 6.35 x 4.75mm (0.250" x 0.187") at the following locations. One (1) row at the exterior face and lateral face of the sash stile and bottom rail and one (1) row at the exterior face of sash interlock stile.

Weep Arrangement: One (1) 28.57 x 5.55mm (1 1/8" x 7/32") weep slot at each end of the frame sill exterior face, spaced 58.73 mm (2^{5/8}") from each end. One (1) 25.4 x 6.35 mm (1" x 1/4") weeps at the exterior face of sill center leg at the miter weld line. One (1) 6.35mm (1/4") diameter weep hole located 44.5mm (1^{3/4}") from each end of top of frame sill at the screen pocket.

Glass: 19.05 mm (3/4") overall thickness Sealed Insulating Glass (SIG): Two (2) pieces, DSB 3.17mm annealed glass with 12.7 mm (1/2") Duraseal air spacer.

Glazing: Structurally glazed using silicone sealant at the interior face of glass and rigid snap in glazing bead at the exterior of glass.

Hardware: Composite sweep lock located 178 mm (7") on center from each end of sash lock stile attached with two (2), #6 x 19.05 mm (3/4") PH screws per lock. Locks engage a groove at the fixed interlock. One (1) 3-coil balance per sash stile.

Reinforcement: Extruded aluminum (solid) profile, part# AF-5569 at the fixed interlock stile sash, and part #AF-5569 at all sash members.

Sealants: see Glazing

Test Buck: Test fixture / buck included a nominal 50.8 x 101.6 mm (2" x 4") SPF lumber perimeter frame wrapped with a nominal 50.8 x 152.4 mm (2" x 6") SPF lumber perimeter frame. The Max RO is the specimen dimension plus 6.35 mm (1/4").

Installation: Finned (New construction) window mounting flange set in sealant and secured to test buck with #8 x 41.3 mm (1^{5/8}") pan head screws spaced 50.8 mm (2") from each end and on 304.8mm (12") centers, full perimeter.

Other Features: Frame and sash corners are mitered and welded. Fixed interlock attached to frame jambs with two (2) #8 x 76.2mm (3") screws per end



6. PERFORMANCE RESULTS

Test	Title of Test	Test Method	Measured	Allowed
1704	Clear Opening		32 ⁷ / ₈ "w x 28 ⁵ / ₈ "h	Min 20.0"w / 24.0"h
			0.61m ² (6.53 Ft ²)	≥0.55m ² (5Ft ²)
	Operating Force	Locks and Latches		
1701.2	Uniform Load	ASTM E 330 ^{Note 1}		
	Positive 1190 Pa (25 Psf)		No Damage	No Damage
	Negative 595 Pa (12.5 Psf)		No Damage	No Damage
1701.2	Air Infiltration	ASTM E 283 ^{Note 2}	0.45 L/s•m ²	2.5 L/s•m ²
	@ 75 Pa (1.57 Psf)		(0.09 cfm/ft ²)	(0.50 cfm/ft ²)
1701.2	Water Resistance	ASTM E 547 ^{Note 3}		
	140 Pa (2.92 Psf)		No Leakage	No Leakage
8.3.1	Operating Force Break away	Initiate	100 N (22.5lbs.)	200 N (44.96 lbs.)
		Open	114.3 N (25.7 lbs.)	155 N (34.85 lbs.)
		Close	47.96 N (10.7 lbs.)	155 N (34.85 lbs.)
8.3.1.3	Latching Devices	Unlock	7.1N (1.6 lbs.)	100 N (22.48 lbs.)
		Lock	8.45 N (1.9 lbs.)	100 N (22.48 lbs.)
8.3.2	Air Infiltration	ASTM E 283 ^{Note 2}	0.45 L/s•m ²	1.5 L/s•m ²
	@ 75 Pa (1.57 Psf)		(0.09 cfm/ft ²)	(0.30 cfm/ft ²)
	Air Exfiltration	ASTM E 283 ^{Note 2}	0.75 L/s•m ²	1.5 L/s•m ²
	@ -75 Pa (-1.57 Psf)		(0.15 cfm/ft ²)	(0.30 cfm/ft ²)
8.3.3	Water Resistance	ASTM E 547 ^{Note 3}		
	360Pa (7.52 PSF)		No Leakage	No Leakage
8.3.4.2	Deflection	ASTM E 330 ^{Note 1}	Fixed Interlock	
	960 Pa (20.05 PSF) Positive	Net deflection	7.34 mm (0.289")	Reported
	960 Pa (20.05 PSF) Negative	Net deflection	8.00 mm (0.315")	Reported
8.3.4.3	Uniform Load	ASTM E 330 ^{Note 1}	Fixed Interlock	
	1440 Pa (30.08 PSF) Positive		No Damage	No Damage
	-Permanent Set		0.330 mm (0.013")	3.65 mm (0.144")
	1440 Pa (30.08 PSF) Negative		No Damage	No Damage
	-Permanent Set		0.787 mm (0.031")	3.65 mm (0.144")
Increased	Uniform Load	ASTM E 330 ^{Note 4}	Fixed Interlock	
	2770 Pa (58.0 PSF) Positive		No Damage	No Damage
	-Permanent Set		1.04 mm (0.041")	3.65 mm (0.144")
	2770 Pa (58.0 PSF) Negative		No Damage	No Damage
	-Permanent Set		1.60 mm (0.063")	3.65 mm (0.144")



<u>Test</u>	<u>Title of Test</u>	<u>Test Method</u>	<u>Measured</u>	<u>Allowed</u>
8.3.5	Forced Entry Resistance	ASTM F 588-14		
	Grade 10		No Entry	No Entry
8.3.6.3	Deglazing Test			
	Rails @ 222 N (50 lbs.)		Pass	Movement <10%
	Stiles @ 311 N (70 lbs.)		Pass	Movement <10%
8.3.6.2	Thermoplastic Corner Weld Test	A440-22	Pass	No clean break

Note 1: CCL's opinion that the use of 2-mil plastic sheeting used to seal against air loss did not enhance the performance characteristics of the specimen.

Note 2: Results reported at the request of the manufacturer.

Note 3: Tested with and without an exterior screen.

Note 4: +/- 2770 Pa (+/-58.0 Psf) meets 24-CFR- 3280.403 / 3280.305 (C) (1) for Wind Zone III Corner Zone


Detailed extrusion and assembly drawings indicating measured wall thickness and corner construction are on file and were compared to the test sample submitted. These records will be retained at **CCL** for a period of four years.

7. DISCLAIMER

This report was prepared by **Construction Consulting Laboratory (CCL)** for the exclusive use of the named client and does not constitute certification of this product. The results noted are actual tested values and apply only to the tested specimen using the components, construction, and installation methods described herein. Detailed drawings compared to the tested specimen are appended to this report. This report is the joint property of **CCL** and the named client to whom it is issued. Permission to reproduce this report by anyone other than the client and **CCL** must be approved in writing by both parties. This report must be reproduced in its entirety.


CONSTRUCTION CONSULTING LABORATORY

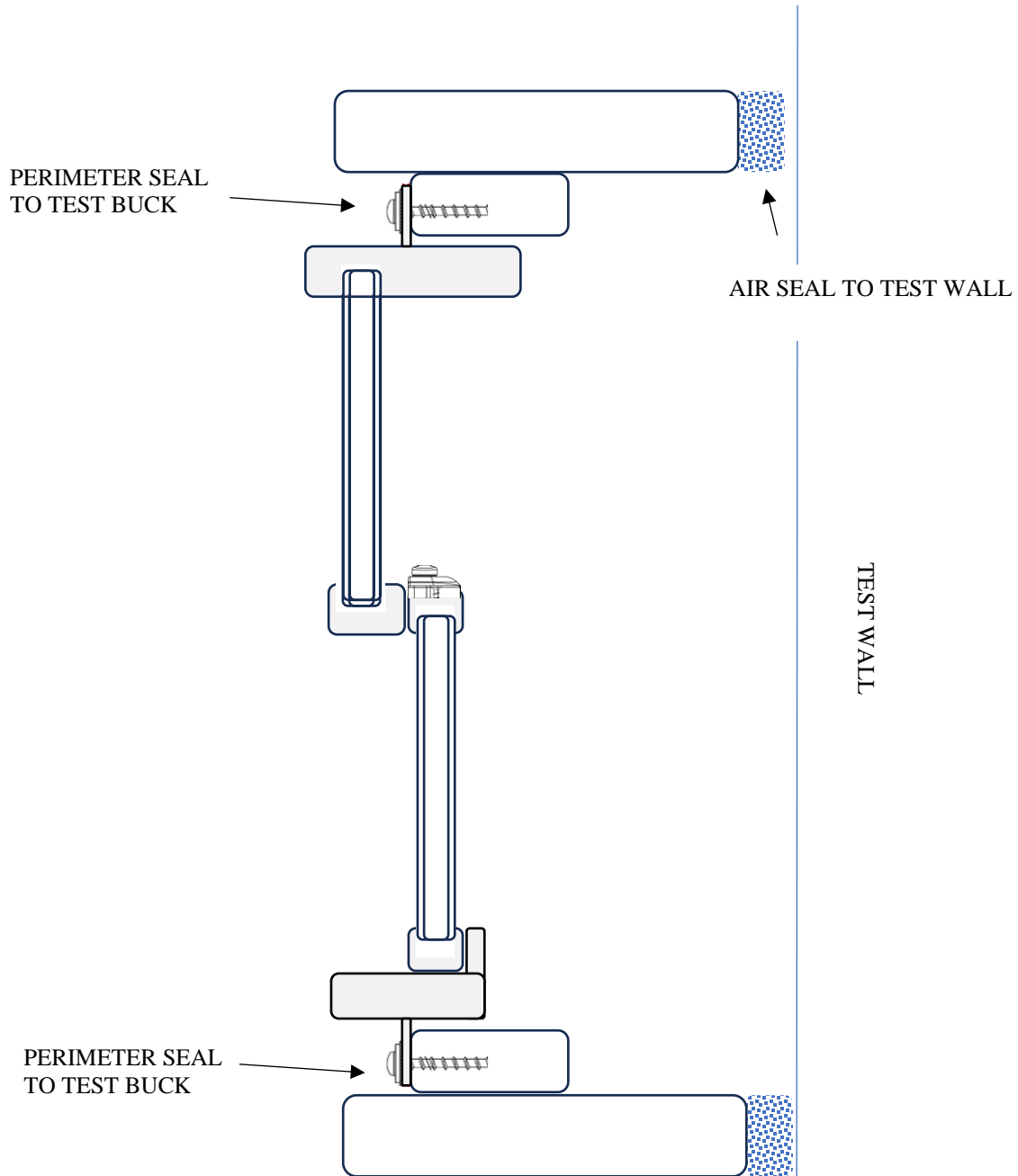

 EDSSON ALARCON
 SENIOR TEST TECHNICIAN
 SIGNED ELECTRONICALLY

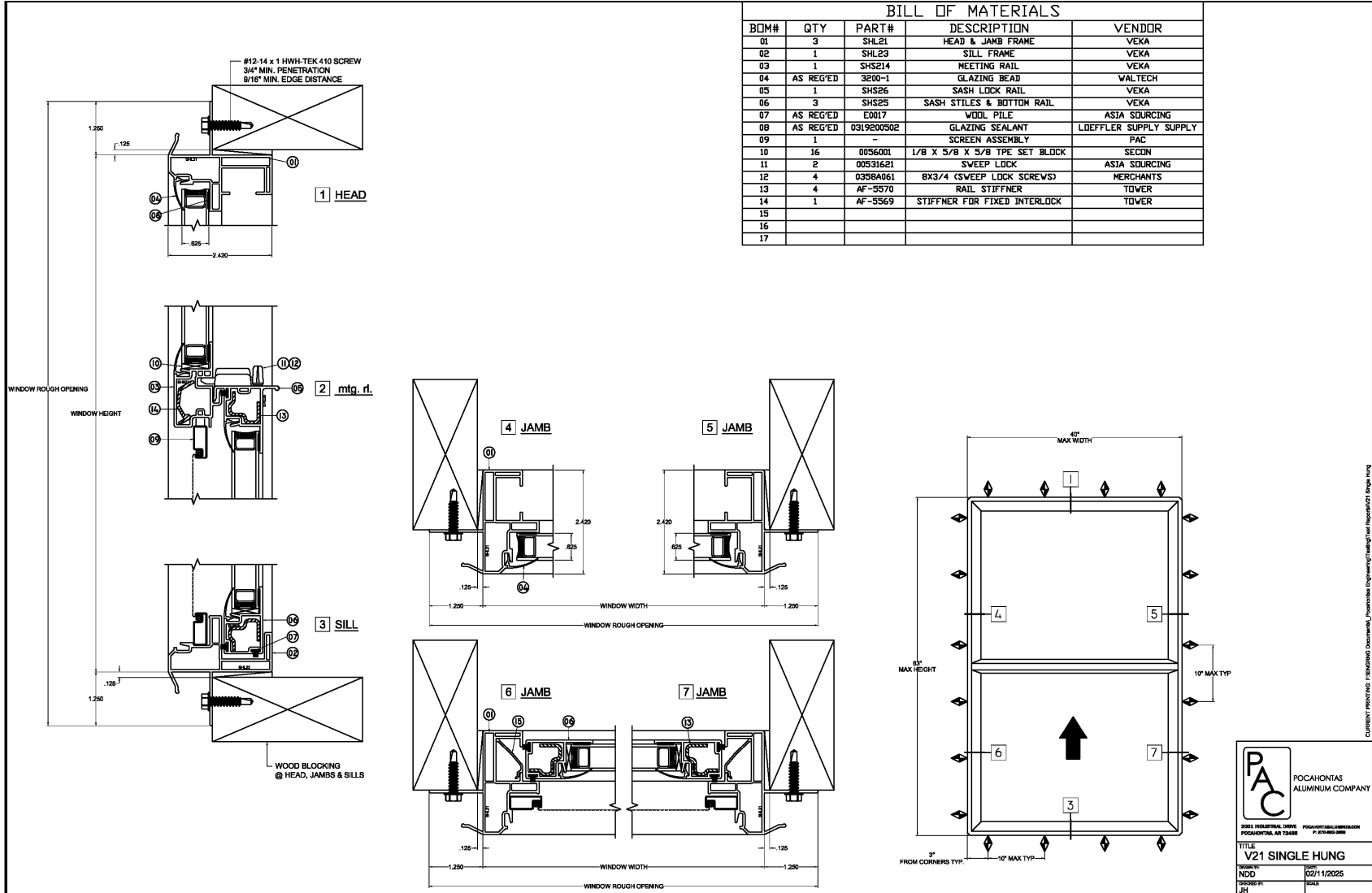

 WESLEY WILSON
 LABORATORY MANAGER
 SIGNED ELECTRONICALLY



APPENDIX
PRODUCT DRAWINGS

Drawing	Part	Date	Stamped as Illustrated
	Cross Section / Assembly / BOM	2-11-25	 <p>CONSTRUCTION CONSULTING LABORATORY INTERNATIONAL 1601 Luna Road Carrollton, Texas 75006 Phone (972) 242-0556 Report# 25-037, Date 12-26-24 Reviewed BY <u>WW</u></p>
SHL21	Frame Head and Jambs	Not dated	
SHL23	Frame Sill	Not dated	
SHS25	Sash stile and bottom rail	Not dated	
SHS26	Sash Top Rail / Interlock	Not dated	
SHS214	Fixed Interlock Rail	Not dated	
	Weather Strip		
AF-5569	Fixed Interlock Reinforcement	06-23-20	
AF-5570	Sash Reinforcement (rail and stiles)	06-23-20	
0343200-1	Glazing Bead	2/17/?	
821	Sash Stop	4-20-18	





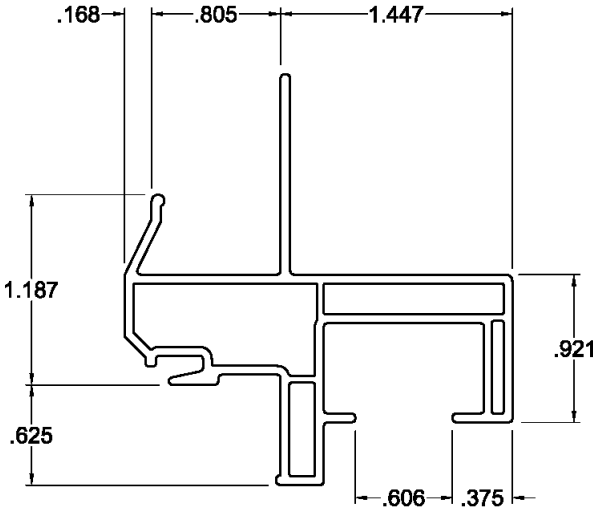
BILL OF MATERIALS

BDM#	QTY	PART#	DESCRIPTION	VENDOR
01	3	SHL21	HEAD & JAMB FRAME	VEKA
02	1	SHL23	SILL FRAME	VEKA
03	1	SHS214	MEETING RAIL	VEKA
04	AS REQ'D	3200-1	GLAZING BEAD	WALTECH
05	1	SHS26	SASH LOCK RAIL	VEKA
06	3	SHS25	SASH STILES & BOTTOM RAIL	VEKA
07	AS REQ'D	E0017	WOOL PILE	ASIA SOURCING
08	AS REQ'D	0319200502	GLAZING SEALANT	LDEFFLER SUPPLY SUPPLY
09	1	-	SCREEN ASSEMBLY	PAC
10	16	0056001	1/8 X 5/8 X 5/8 TYP SET BLOCK	SECON
11	2	00531421	SWEEP LOCK	ASIA SOURCING
12	4	0358A061	8X3/4 (SWEEP LOCK SCREWS)	MERCHANTS
13	4	AF-5570	RAIL STIFFNER	TOVER
14	1	AF-5569	STIFFNER FOR FIXED INTERLOCK	TOVER
15				
16				
17				

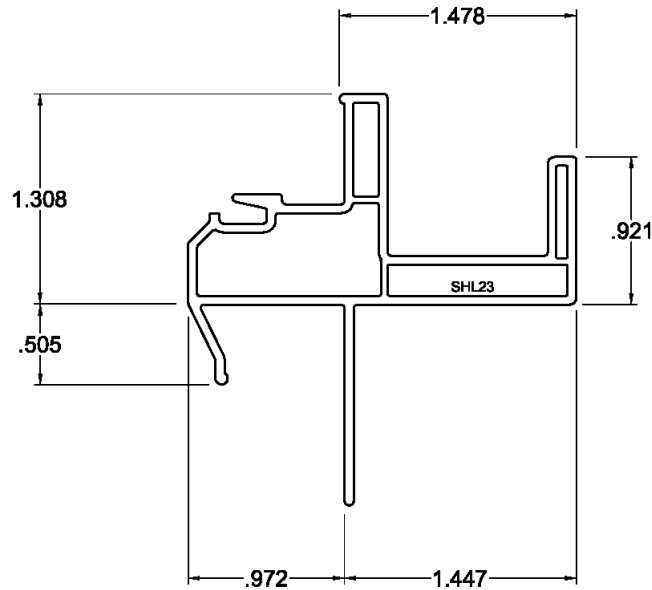

POCAHONTAS ALUMINUM COMPANY
2061 INDUSTRIAL DRIVE
 POCAHONTAS, AR 72450

TITLE: V21 SINGLE HUNG
 DRAWN: NDD
 DATE: 02/11/2025
 CHECKED: JH

COURTESY: PROTECTIVE FINISHING DOCUMENT: POCALUMEN/Engineering/Window/2025/02/21/2025



PART NO.	MATERIAL
SHL21	PVC
END USE	
FRAME HEAD & JAMBS	
NOTE(S)	
TYP. WALL THICKNESS = 0.055"	

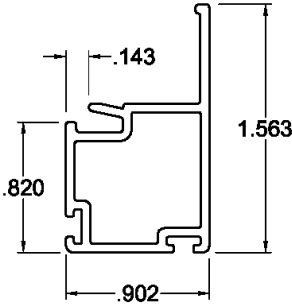


PART NO.	MATERIAL
SHL23	PVC
END USE	
FRAME SILL	
NOTE(S)	
TYP. WALL THICKNESS = 0.055"	

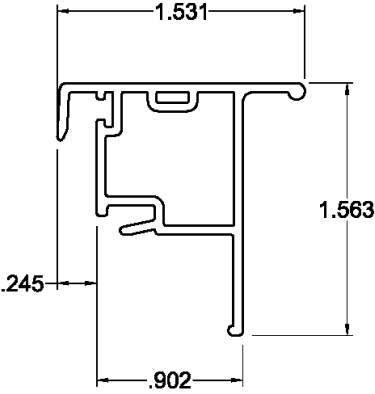


CONSTRUCTION CONSULTING LABORATORY
AAMA NAFS 22 / AAMA 1701.2 PERFORMANCE TESTING
CLIENT: POCAHONTAS ALUMINUM COMPANY

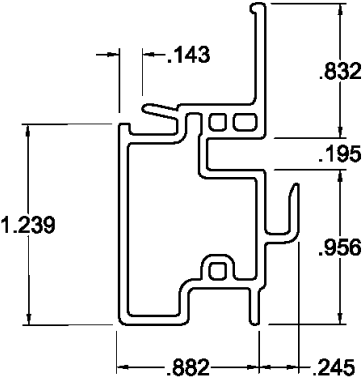
REPORT: CCL 25-037
DATE: FEBRUARY 21, 2025
PROJECT: V21 HUNG



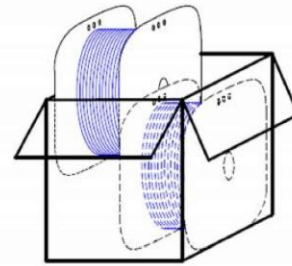
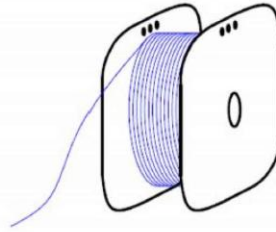
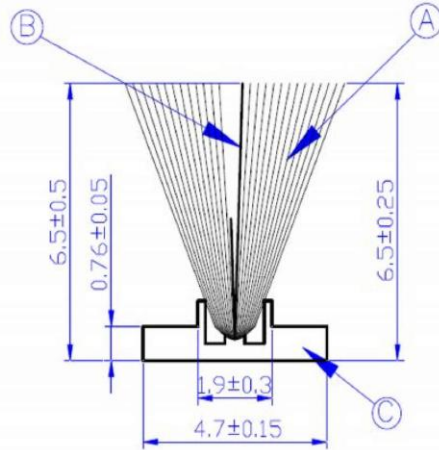
PART NO. SHS25	MATERIAL PVC
END USE SASH SIDE & BOTTOM RAILS	
NOTE(S) TYP. WALL THICKNESS = 0.055"	



PART NO.	MATERIAL
SHS26	PVC
END USE	SASH LOCK RAIL
NOTE(S)	TYP. WALL THICKNESS = 0.055"



PART NO.	MATERIAL
SHS214	PVC
END USE	
FRAME MEETING RAIL	
NOTE(S)	
TYP. WALL THICKNESS = 0.055"	



序号 Code	材料 Material
A	BCF纱线 BCF yarn 硅化 Silcone <input checked="" type="checkbox"/> 非硅化 Non-Silicone <input type="checkbox"/> 黑 Black <input type="checkbox"/> 灰 Grey <input checked="" type="checkbox"/> 白 White <input type="checkbox"/> UV <input checked="" type="checkbox"/>
B	弹性塑料片 Elastic film <input checked="" type="checkbox"/> 标准 Standard <input type="checkbox"/> 黑 Black <input type="checkbox"/> 白 White <input checked="" type="checkbox"/> 无纺布 Non-woven fabrics <input type="checkbox"/> 涂型 Plastic coating Yes <input type="checkbox"/> No <input type="checkbox"/> 黑 Black <input type="checkbox"/> 灰 Grey <input type="checkbox"/> 白 White <input type="checkbox"/>
C	PP塑料基板 Plastic base <input checked="" type="checkbox"/> 半透明 Translucent <input checked="" type="checkbox"/> 灰 Grey <input type="checkbox"/> 白 White <input type="checkbox"/>
质量控制点	焊接拉力每厘米大于30N Welding tension more than 30N per centimeter Quality Control point 产品基板弧度每米小于4cm Base radian less than 4cm per meter
特殊说明	Special remark

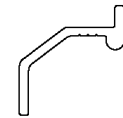
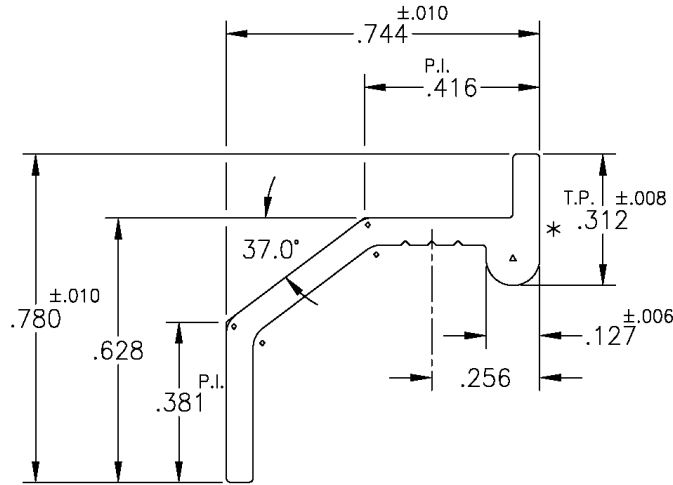
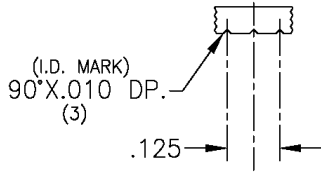
4.7×6.5×6.5

包装说明 Package		750米一卷，两卷每箱 (750M per roll, 2 rolls one carton)	
每卷米数误差±2%，最大不超过±5米 more or less ±2% per roll, less than 5M per roll		纸箱材质 Carton material: BE 纸箱规格 Carton size: 45*57*45	
编制 Editor:	姓名 Name: 日期 Date: 2025/02/21	审核 Auditor:	姓名 Name: 日期 Date: 2025/02/21
审批 Approver:	姓名 Name: 日期 Date: 2025/02/21	图纸状态 Drawing status:	图纸编号 Drawing No.: E001
产品截面缩放比例 (Drawing scale): 1:1		产品米克重 (product gram weight): 7.3±0.2	
版本号 (Format): A-5	页数 (Sheet): 1/1	类型: PP 密封条 Title: Brush seal, PP	



* STRUCTURAL AND/OR HEAT STREAKS ARE POSSIBLE IN THIS AREA AND MAY NOT BE REASON FOR REJECTION.

FINISH()
 2PC()



ACTUAL SIZE



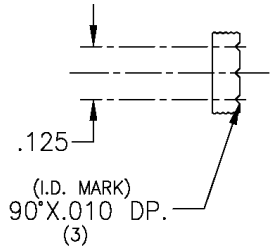
NOTES: ±.006

1. .064 TYP. WALL THKN. EXCEPT AS NOTED.
2. BREAK SHARP CORNERS AT .010 R.
3. NO EXPOSED SURFACES

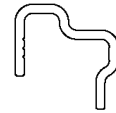
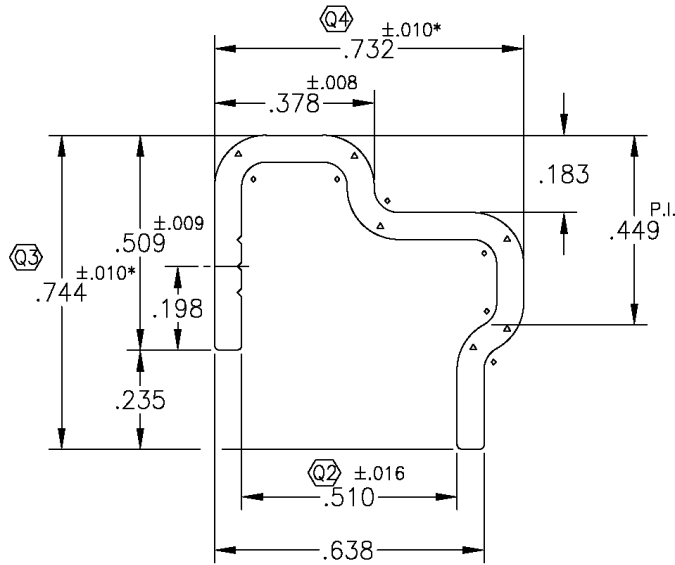
REVISION					tel TOWER EXTRUSIONS, LTD. WYLIE, TX			
					NAME POCAHONTAS			
	ALUMINUM ASSOCIATION STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED				PART NO. AF-5569		DWG. NO. D-062320-01	
	EST. AREA .094	TOTAL PERIM. 2.866	DATE: 06-23-20	DRAWN BY: S. BATALLA	END USE STIFFNER FOR FIXED INTERLOCK			
EST. WT./FT. .113	CIRCLE SIZE 1.07	HOLES	PREF. PRESS	CLASS SOLID		ALLOY 6063-T5	CAVITY	DIE NO. M-15271
OUTSIDE PERIM. 2.866	FACTOR 25	DIE SIZE	SCALE 3:1					



FINISH()
 2PC()



DIE NO.	M-15272
	X" PRESS
BKR. NO.	
BOLS. NO.	
FDR. PLT.	
EXT. RATIO	
	.058 R.-(*) (6)
	.122 R.-(*) (6)



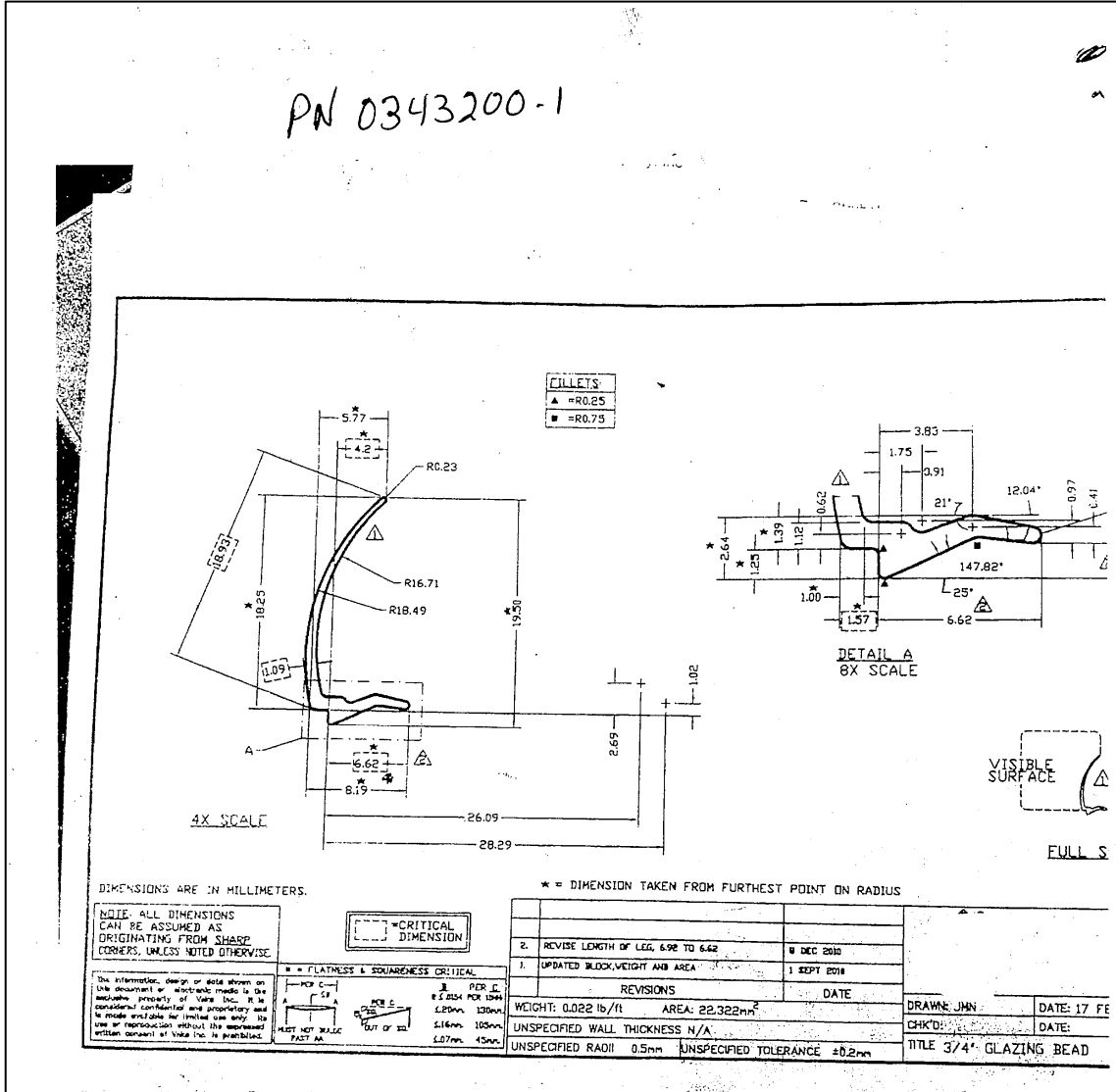
ACTUAL SIZE

- Q1
 NOTES: ±.006
 1. .064 TYP. WALL THKN. EXCEPT AS NOTED.
 2. BREAK SHARP CORNERS AT .010 R.
 3. NO EXPOSED SURFACES

REVISION					tel TOWER EXTRUSIONS, LTD. WYLIE, TX			
					NAME POCAHONTAS			
	ALUMINUM ASSOCIATION STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED				PART NO. AF-5570		DWG. NO. D-062320-02	
	EST. AREA .111	TOTAL PERIM. 3.611	DATE: 06-23-20	DRAWN BY: S. BATALLA	END USE STIFFNER FOR LOCK RAIN			
EST. WT/FT. .133	CIRCLE SIZE 0.93	HOLES	PREF. PRESS	CLASS SOLID		ALLOY 6063-T5	CAVITY	DIE NO. M-15272
OUTSIDE PERIM. 3.611	FACTOR 27	DIE SIZE	SCALE 3:1 P					



PN 0343200-1



-END OF REPORT-