QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

8148 NW 74 Avenue
Medley, FL, 33166
305.885.3328 ph. | 305.885.3329 fx

CLIENT: **Miracle Distribution Inc.**
#106, 2451 W. Grapevine Mills Cir.
Grapevine, TX 76051

Project No: MED-1245d	Report Date: May 7, 2024

SAMPLE ID: Series: Single Hung

SAMPLE DESCRIPTION: Width: 1200 mm; Height: 1500 mm; See pages 2-3 for full description.

SAMPLING DETAIL: The test sample manufactured by **Miracle Distribution Inc.** was submitted directly to QAI by the client. Samples were not independently selected for testing.

DATE OF RECEIPT: Samples were received at the QAI Miami Laboratory on March 8, 2024

TESTING PERIOD: April 22, 2024

EXPIRATION DATE: April 22, 2029

TESTING LOCATION: QAI Laboratories (FTL) – Miami, Florida, USA

AUTHORIZATION: Proposal Number 23MT05063R5, signed by John Hyuk Lee, dated December 6, 2023

TEST PROCEDURE: Testing to the following requirements:

- NFRC 102-2020 Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems

TEST RESULTS: The Single Hung achieved the results found on pages 4-5 of this test report when tested in accordance with the NFRC 102.

CONTENTS: Test report pages 1 through 7.

Prepared by

Monika Sanchez

Monika Sanchez

Signed for and on behalf of
QAI Laboratories

Jose Sanchez

Jose Sanchez
Person-in-Responsible-Charge

PRODUCT DESCRIPTION

Model Designation:	Single Hung
Operating Type:	VSSH
Overall Size:	1200mm (47 1/4") by 1500mm (59") high
NFRC Standard Size:	1200mm (47 1/4") by 1500mm (59") high

Frame and Vent Construction	
Frame Construction, Material, Color and Finish:	(VY) vinyl members with miter welded joints
Vent Construction, Material, Color and Finish:	(VY) vinyl members with miter welded joints

Glazing Description	
Layer 1:	3/16" clear Low E **(Solarban 70XLEN2plus on surface #2 e=0.018)
Gap:	1/2" gap using a Technoform spacer
Layer 2:	3/16" clear

***as per manufacture*

Glazing Method	
Interior Condition:	Silicone
Exterior Condition:	Vinyl glazing bead

Gas Type	**Filling Technique**	**Gas Fill Percentage**
Argon	Single Probe	90%

***as per manufacture*

Daylight Opening
Fixed Lite 44 3/8 x 33 5/8 high; Vent 42 1/8 x 20 1/4 high

Weather Stripping		
Quantity	**Description**	**Location**
Single Row	Mohair	Vent jamb rails, vent bottom rail and vent meeting rail

Hardware		
Quantity	**Description**	**Location**
Two	Balances	Frame jambs
Two	Surface mount metallic camlocks	Vent meeting rail

Weep Holes		
Quantity	**Description**	**Location**
None	None	None

Reinforcement	
Material	**Location**
None	None

Dividers/Grids		
Grid Size	**Material**	**Grid Pattern**
None	None	None

Measured Test Data

Heat Flows

1.	Total Measured Input into Metering Box (Qtotal)	734.36 Btu/hr
2.	Surround Panel Heat Flow (Qsp)	305.85 Btu/hr
3.	Surround Panel Thickness	4.0 inches
4.	Surround Panel Conductance	0.06 Btu/hr·ft²·F
5.	Metering Box Wall Heat Flow (Qmb) and Flanking Heat Flow (Qfl)	-3.68 Btu/hr
6.	EMF vs Heat Flow Equation (equivalent information)	y=5.311x+10.343
7.	Net Specimen Heat Loss (Qs)	432.19 Btu/hr

Areas

1.	Test Specimen Projected Area (As)	19.36 ft²
2.	Specimen, Projected Frame Area (A_f)	3.08 ft²
3.	Specimen, Projected Glazing Area (A_g)	16.28 ft²
4.	Test Specimen Interior Total (3-D) Surface Area (Aint)	20.55 ft²
5.	Test Specimen Exterior Total (3-D) Surface Area (Aext)	20.89 ft²
6.	Metering Box Opening Area (Amb)	103.78 ft²
7.	Metering Box Baffle Area (Ab1)	92.91 ft²
8.	Surround Panel Interior Exposed Area (Asp)	84.42 ft²

Test Conditions

1.	Average Metering Room Air Temperature	69.80 F
2.	Average Cold Side Air Temperature	-0.12 F
3.	Average Guard/Environmental Air Temperature	73.0 F
4.	Metering Room Average Relative Humidity	12.5 %
5.	Measured Cold Side Wind Velocity (Perpendicular Flow)	11.9 mph
6.	Measured Static Pressure Difference Across Test Specimen	0.0 psf

Surface Temperature Data

1.	Warm side surround panel	66.25 F
2.	Cold side surround panel	0.68 F

Results

1.	Thermal Transmittance of Test Specimen (Us)	0.32 Btu/hr·ft²·F
2.	Standardized Thermal Transmittance of Test Specimen (Ust)	0.31 Btu/hr·ft²·F

Calculated Test Data

CTS Method

1.	Room-Side Surface Emittance of CTS (e_1)	0.84
2.	Room-Side Surface Emittance of Specimen Frame (ef_1)	0.90
3.	Room-Side Surface Emittance of Specimen Glazing (eg_1)	0.90
4.	Room-Side Surface Emittance of Exposed Surround Panel (e_{sp1})	0.90
5.	Area-Weighted Emittance of all Room Side Surface in View of the baffle (e_{s1})	0.88
6.	Warm Side Baffle Emittance (eb1)	0.92
7.	Equivalent Warm Side Surface Temperature	53.84 F
8.	Equivalent Cold Side Surface Temperature	4.48 F
9.	Warm Side Baffle Surface Temperature	69.07 F
10.	Measured Warm Side Surface Conductance (hh)	1.40 Btu/hr·ft²·F
11.	Measured Cold Side Surface Conductance (hc)	4.86 Btu/hr·ft²·F
12.	Test Specimen Thermal Conductance (Cs)	0.45 Btu/hr·ft²·F
13.	Convection Coefficient(Kc)	0.32 Btu/(hr·ft²·$F^{1.25}$)
14.	Radiative Test Specimen (Qr1)	233.92 Btu/hr
15.	Conductive Test Specimen Heat Flow (Qc1)	198.54 Btu/hr
16.	Radiative Heat Flux of Test Specimen (qr1)	12.08 Btu/hr·ft²·F
17.	Convective Heat Flux of Test Specimen (qc1)	10.26 Btu/hr·ft²·F
18.	Standardized Warm Side Surface Conductance (hsth)	1.26 Btu/hr·ft²·F
19.	Standardized Cold Side Surface Conductance (hstc)	5.28 Btu/hr·ft²·F
20.	Standardized Thermal Transmittance (Ust)	0.31 Btu/hr·ft²·F

Test Duration

1. The environmental systems were started at 11:04 hours, on 4/21/2024.
2. The test parameters were considered stable for two consecutive four hour test periods from 00:04 hours, on 4/22/2024 to 08:04 hours, on 4/22/2024.
3. The thermal performance test results were derived from 04:04 hours, on 4/22/2024 to 08:04 hours, on 4/22/2024.

The reported Standardized Thermal Transmittance (Ust) was determined using CTS method per Section 8.2 (A) of NFRC 102.

Glazing Deflection (in.)	Fixed Lite	Vent
Gap width upon receipt of sample in laboratory	0.502	0.504
Gap width at laboratory ambient condition on day of testing	0.502	0.504
Center of gap at conclusion of test	0.496	0.509

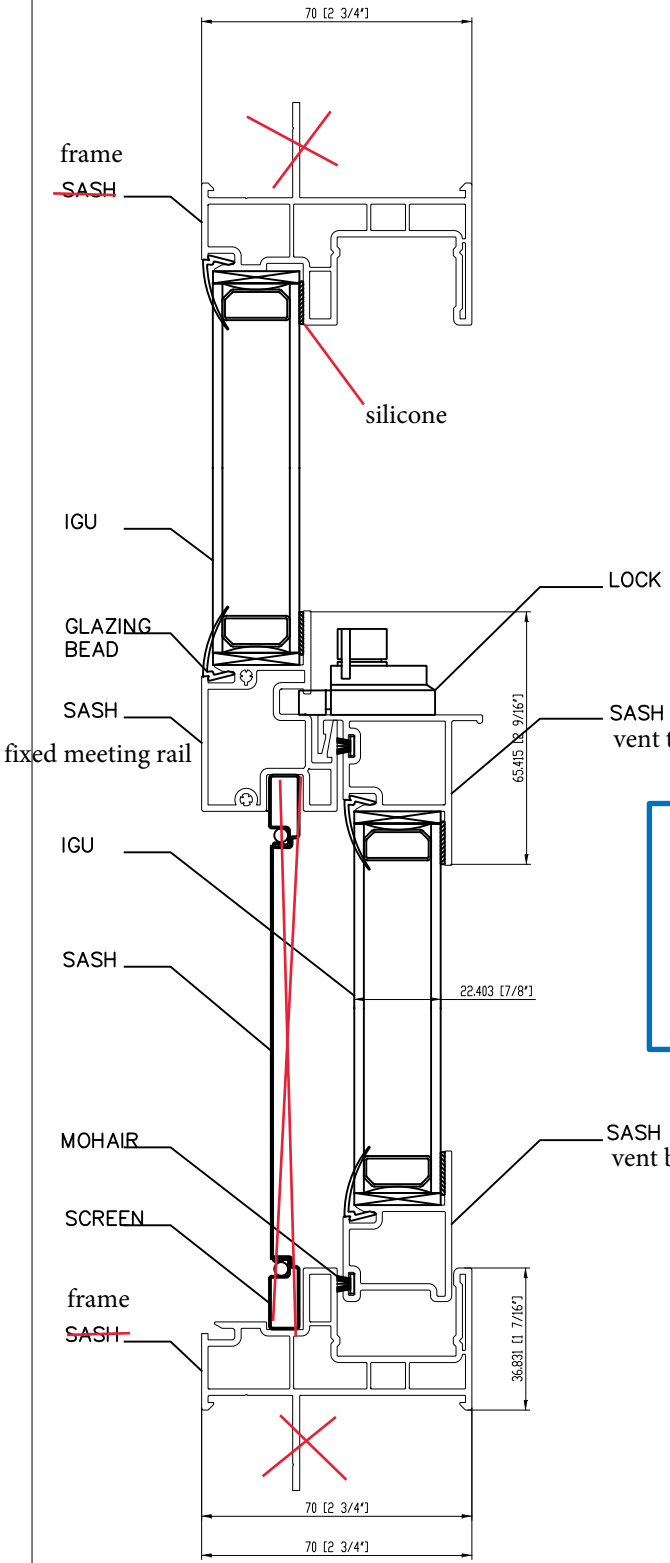
Remarks
The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test. The calibration of QAI Laboratory's "thermal test chamber" was conducted December 2023. "Ratings included in this report are for submittal to an NFRC-licensed IA for certification purposes and are not meant to be used for labeling purposes. Only those options identified on a valid Certification Authorization (CA) are to be used for labeling purposes." The test sample was installed in a vertical orientation; the exterior of the specimen was exposed to the cold side. The direction of heat was from the interior (warm side) to the exterior (cold side) of the specimen. Drawings referenced in this document are an integral part of this report, therefore, are required when distributing this test report. Test results obtained represent the actual value of the tested specimens and do not constitute opinion, endorsement or certification by this laboratory. Rounding of numerical values are per NFRC 601, NFRC Unit and Measurement Policy. Testing was conducted in full compliance with NFRC requirements. As per the client, the sample described in this test report was a production line for initial certification. An estimate of the measurement of uncertainty for these results is available upon request.

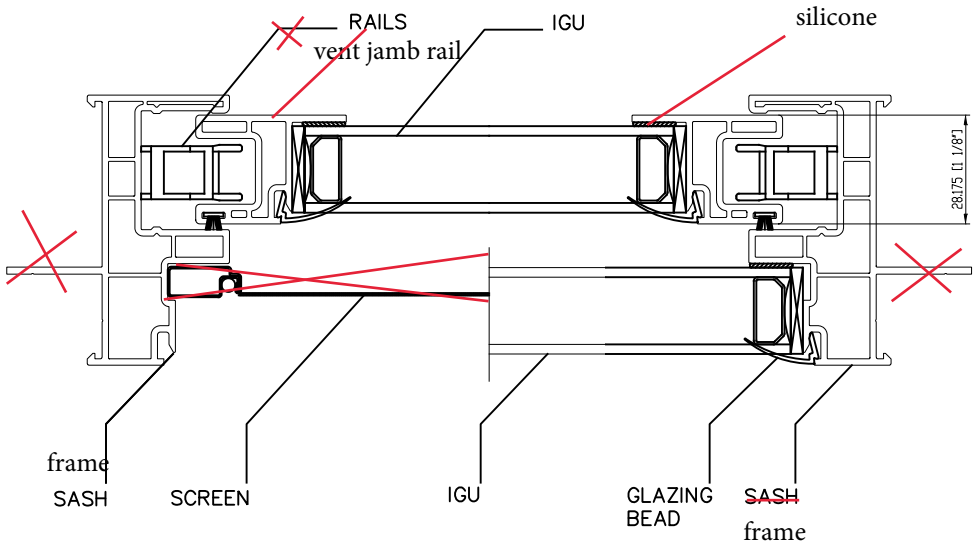
REVISION HISTORY:
5/7/2024: Initial report release

*********END REPORT*********

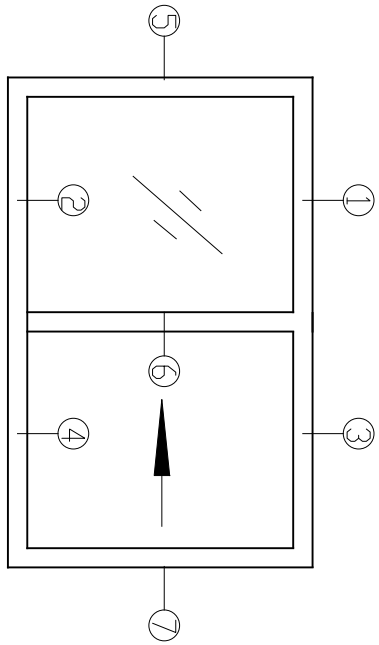
APPENDIX

Fenestration Product Drawings and Bill of Material





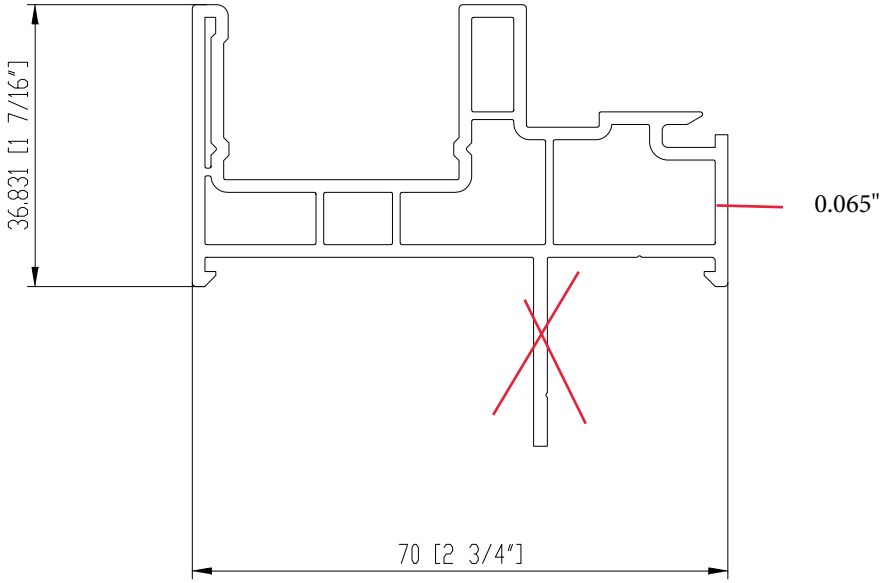
Tested Sample complies with this detail except where noted
Laboratory Number: MED-1245d
Date: 5/7/2024
Initials: MS



??	PSH-040??	? ? ?

Tested Sample complies with this detail except where noted
Laboratory Number: MED-1245d
Date: 5/7/2024
Initials: MS

frame
rigid vinyl

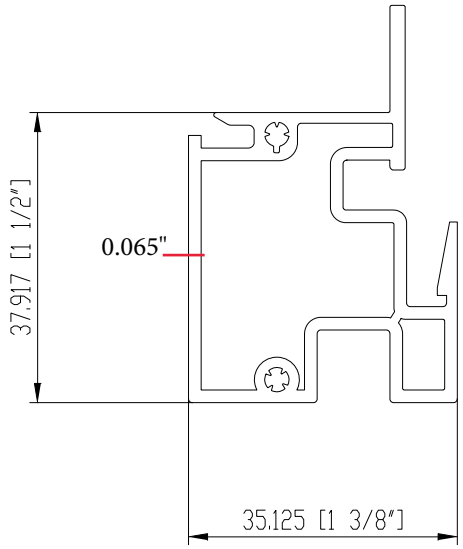


? ? ?	??????		? ? ?
? ?	? ?	? ?	
P.J.Y	23.03.10		
S.M: PRECISION	?? ??		? ?
	H/S		3/1

??	PSH-040??	? ? ?

Tested Sample complies with this detail except where noted
Laboratory Number: MED-1245d
Date: 5/7/2024
Initials: MS

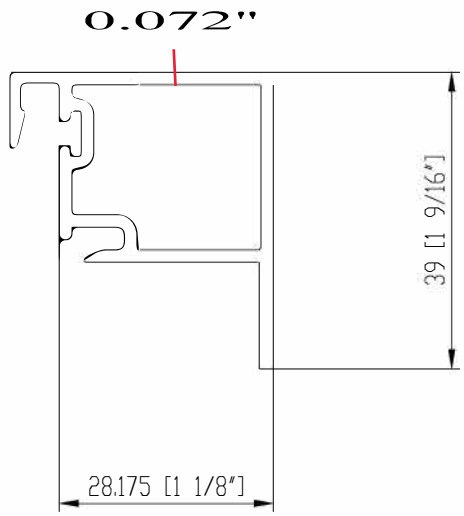
fixed meeting rail
rigid vinyl



? ? ?	?????		? ? ?
? ?	? ?	? ?	
P.J.Y	23.03.10		
S.M: PRECISION		?? ?? H/S	? ? 3/1

??	PSH-040??	? ? ?

Tested Sample complies with this detail except where noted
Laboratory Number: MED-1245d
Date: 5/7/2024
Initials: MS

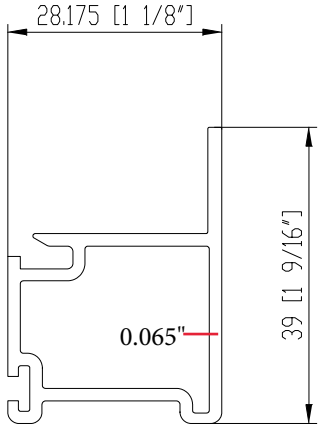


vent top rail
rigid vinyl

? ? ?	?????	? ? ?
? ?	? ? ? ?	
P.J.Y	23.03.10	
S.M: PRECISION	?? ?? H/S	? ? 3/1

??	PSH-040??	? ? ?

Tested Sample complies with this detail except where noted
Laboratory Number: MED-1245d
Date: 5/7/2024
Initials: MS

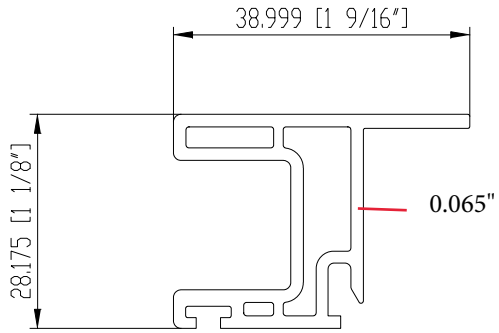


vent bottom rail
rigid vinyl

? ? ?	?????	? ? ?
? ?	? ? ? ?	
P.J.Y	23.03.10	
S.M: PRECISION	?? ?? H/S	? ? 3/1

??	PSH-040??	? ? ?

Tested Sample complies with this detail except where noted
Laboratory Number: MED-1245d
Date: 5/7/2024
Initials: MS

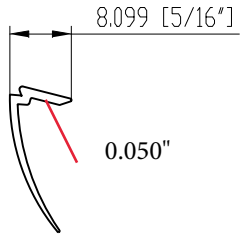


vent jamb rail
rigid vinyl

? ? ?	?????	? ? ?
? ?	? ? ? ?	
P.J.Y	23.03.10	
S.M: PRECISION	?? ?? H/S	? ? 3/1

??	PSH-040??	? ? ?

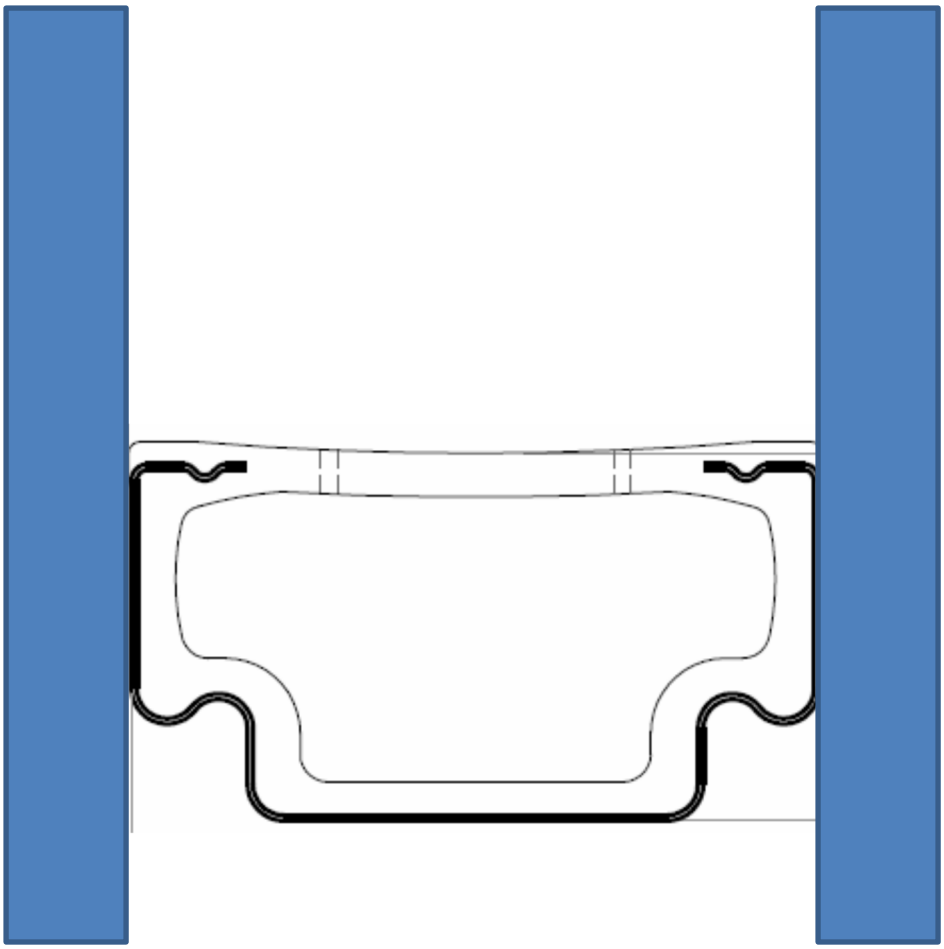
Tested Sample complies with this detail except where noted
Laboratory Number: MED-1245d
Date: 5/7/2024
Initials: MS



glazing bead
rigid vinyl

? ? ?	?????	? ? ?
? ?	? ? ? ?	
P.J.Y	23.03.10	
S.M: PRECISION	?? ?? H/S	? ? 3/1

`



Primary Sealant: PIB 0.004" by 0.140" high
Secondary Sealant: Silicone
Spacer Material: Stainless Steel “Oxidized” and Polypropylene
Desiccant: Loose Fill Silica Gel

Tested Sample complies with this detail except where noted
Laboratory Number: MED-1245d
Date: 5/7/2024
Initials: MS