intertek
Total Quality. Assured.

ALUMINTECHNO, JLLC

THERMAL PERFORMANCE TEST REPORT

SCOPE OF WORK
W72 FIXED WINDOW

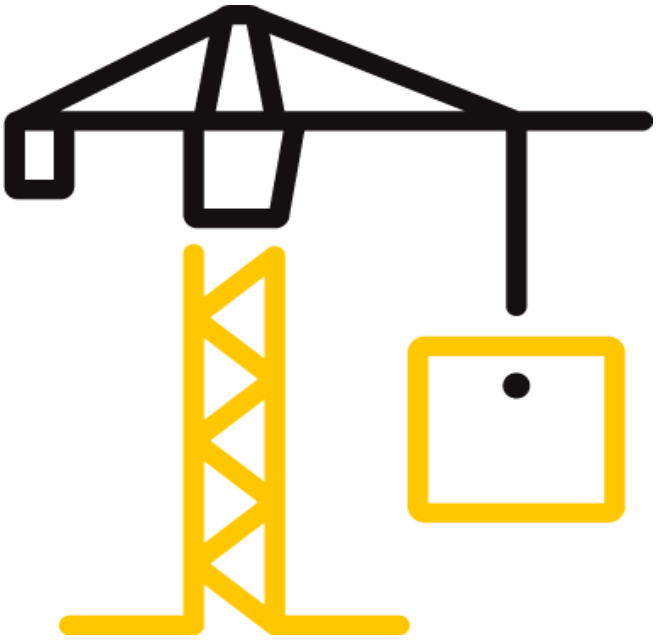
REPORT NUMBER
L3931.01-116-46 R0

TEST DATE
04/14/21

ISSUE DATE
04/15/21

PAGES
16

DOCUMENT CONTROL NUMBER
RTTDS-R-AMER-Test-2822(a) (07/01/20)
©2017 INTERTEK



130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR ALUMINTECHNO, JLLC
Report No.: L3931.01-116-46 R0
Date: 04/15/21

REPORT ISSUED TO

ALUMINTECHNO, JLLC
Selitskogo str., 12/211
FEZ "Minsk"
Minsk Region, Minsk Area
220075,
REPUBLIC OF BELARUS

SECTION 1

SCOPE

SERIES/MODEL: W72 Fixed Window
TYPE: Fixed

Intertek Building & Construction (Intertek B&C) was contracted by AluminTechno, JLLC to evaluate the thermal performance per NFRC 102-2020. Results obtained are tested values and were secured by using the designated test method. Testing was conducted at Intertek B&C test facility in York, Pennsylvania.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends five years after the test date. Test records, such as detailed drawings, datasheets, or other pertinent project documentation, will be retained for the entire test record retention period. Representative samples of the test specimen will be retained by Intertek B&C for a minimum of two and a half years from the submittal date to the Inspection Agency and no more than five years from the test date.

For INTERTEK B&C:

COMPLETED BY	Ryan P. Moser	**REVIEWED BY**	Shon W. Einsig
TITLE	Senior Technician	**TITLE**	Technician Team Leader, IIRC
SIGNATURE	Ryan P. Moser Digitally Signed by: Ryan P. Moser	**SIGNATURE**	Shon W. Einsig/PAN Digitally Signed for: Shon Einsig by Paige Novak
DATE	04/15/21	**DATE**	04/15/21

RPM:pan

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample(s) tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR ALUMINTECHNO, JLLC
Report No.: L3931.01-116-46 R0
Date: 04/15/21

SECTION 2
SUMMARY OF TEST RESULTS

Standardized U-factor (Ust): 0.17 Btu/hr·ft^2·F (CTS Method)

SECTION 3
TEST SPECIMEN SUMMARY

SERIES/MODEL	W72 Fixed Window
TYPE	Fixed
OVERALL SIZE	47-1/4" x 59" (1200 mm x 1499 mm) (Model Size)
NFRC STANDARD SIZE	47.2" x 59.1" (1200 mm wide x 1500 mm high)
TEST SAMPLE SUBMITTED BY	Client
TEST SAMPLE SUBMITTED FOR	Validation for Initial Certification (Production Line Unit) & Plant Qualification

SECTION 4
TEST METHOD

The specimens were evaluated in accordance with the following:

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

SECTION 5
MATERIAL SOURCE/INSTALLATION

The test specimen was provided by the client.

The test sample was installed in a vertical orientation, the exterior of the specimen was exposed to the cold side.

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Shon W. Einsig	Intertek B&C
Ryan P. Moser	Intertek B&C

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR ALUMINTECHNO, JLLC
Report No.: L3931.01-116-46 R0
Date: 04/15/21

SECTION 7
TEST SAMPLE DESCRIPTION

Frame

MATERIAL	AT (1.04"): Aluminum with Thermal Breaks - All Members		
SIZE	47-1/4" x 59" (Model Size)		
DAYLIGHT OPENING	42-5/8" x 54-1/2"	**GLAZING METHOD**	Interior
EXTERIOR COLOR	White	**EXTERIOR FINISH**	Paint
INTERIOR COLOR	White	**INTERIOR FINISH**	Paint
CORNER JOINERY	Mitered / Keys & Stakes / Sealed		

Glazing Information

LAYER 1	1/4"	Pilkington Suncool 70/35 Pro-T (e=0.021*, #2)	
GAP 1	0.72"	TS-D: Chromatech Ultra Spacer	97% Argon*
LAYER 2	1/4"	Clear	
GAP 2	0.72"	TS-D: Chromatech Ultra Spacer	97% Argon*
LAYER 3	1/4"	AGC Planibel Top N+ T (e=0.040*, #5)	
GAS FILL METHOD		Dual-Probe Method*	

**Stated per Client/Manufacturer*
N/A Non-Applicable

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

SECTION 7 (CONTINUED)

TEST SAMPLE DESCRIPTION (CONTINUED)

Weatherstripping

DESCRIPTION	QUANTITY	LOCATION
Compression gasket	1 Row	Exterior glazing perimeter
Wedge gasket	1 Row	Interior glazing perimeter

Hardware

DESCRIPTION	QUANTITY	LOCATION
No hardware		

Drainage

DRAINAGE METHOD	SIZE	QUANTITY	LOCATION
Weepslot with cover	1.00" x 0.25"	2	Sill face

intertek
Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR ALUMINTECHNO, JLLC
Report No.: L3931.01-116-46 R0
Date: 04/15/21

SECTION 8
THERMAL TRANSMITTANCE (U-FACTOR): MEASURED TEST DATA

Heat Flows

1.	Total Measured Input into Metering Box (Qtotal)	303.56	Btu/hr
2.	Surround Panel Heat Flow (Qsp)	53.33	Btu/hr
3.	Surround Panel Thickness	4.00	inches
4.	Surround Panel Conductance	0.0476	Btu/hr·ft^2·F
5.	Metering Box Wall Heat Flow (Qmb)	0.42	Btu/hr
6.	EMF vs Heat Flow Equation (equivalent information)	0.0118*EMF + 0.002	
7.	Flanking Loss Heat Flow (Qfl)	9.96	Btu/hr
8.	Net Specimen Heat Loss (Qs)	239.85	Btu/hr

Areas

1.	Test Specimen Projected Area (As)	19.36	ft^2
2.	Test Specimen Projected Frame Area (Af)	3.23	ft^2
3.	Test Specimen Projected Glazing Area (Ag)	16.13	ft^2
4.	Metering Box Opening Area (Amb)	36.11	ft^2
5.	Metering Box Baffle Area (Ab1)	33.94	ft^2
6.	Surround Panel Interior Exposed Area (Asp)	16.75	ft^2

Test Conditions

1.	Average Metering Room Air Temperature (th)	69.80	F
2.	Average Cold Side Air Temperature (tc)	-0.39	F
3.	Average Guard/Environmental Air Temperature	71.27	F
4.	Metering Room Average Relative Humidity	8.52	%
5.	Metering Room Maximum Relative Humidity	8.67	%
6.	Metering Room Minimum Relative Humidity	8.38	%
7.	Measured Cold Side Wind Velocity (Perpendicular Flow)	12.66	mph
8.	Measured Warm Side Wind Velocity (Parallel Flow)	NA	mph
9.	Measured Static Pressure Difference Across Test Specimen	0.00" ± 0.04"	H_2O

Average Surface Temperatures

1.	Metering Room Surround Panel	67.36	F
2.	Cold Side Surround Panel	0.50	F

Results

1.	Thermal Transmittance of Test Specimen (Us)	0.18	Btu/hr·ft^2·F
2.	Standardized Thermal Transmittance of Test Specimen (Ust)	0.17	Btu/hr·ft^2·F

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR ALUMINTECHNO, JLLC
Report No.: L3931.01-116-46 R0
Date: 04/15/21

SECTION 9
THERMAL TRANSMITTANCE (U-FACTOR): CALCULATED TEST DATA

CTS Method Results

1.	Warm Side Surface Emittance of CTS (e1)	0.84	
2.	Warm Side Area-Weighted Surface Emittance of Specimen Frame (ef1)	0.90	
3.	Warm Side Area-Weighted Surface Emittance of Specimen Glazing (eg1)	0.84	
4.	Warm Side Surface Emittance of Surround Panel (esp1)	0.90	
5.	Warm Side Area-Weighted Surface Emittance in View of the Baffle (es1)	0.87	
6.	Warm Side Baffle Emittance (eb1)	0.92	
7.	Cold Side Baffle Emittance (eb2)	N/A	
8.	Equivalent Warm Side Surface Temperature (t1)	60.33	F
9.	Equivalent Cold Side Surface Temperature (t2)	1.98	F
10.	Warm Side Baffle Surface Temperature	68.75	F
11.	Cold Side Baffle Surface Temperature	N/A	F
12.	Measured Warm Side Surface Conductance (hh)	1.31	$Btu/hr \cdot ft^2 \cdot F$
13.	Measured Cold Side Surface Conductance (hc)	5.23	$Btu/hr \cdot ft^2 \cdot F$
14.	Test Specimen Thermal Conductance (Cs)	0.21	$Btu/hr \cdot ft^2 \cdot F$
15.	Convection Coefficient (Kc)	0.34	$Btu/(hr \cdot ft^2 \cdot F^{1.25})$
16.	Radiative Test Specimen Heat Flow (Qr1)	130.64	Btu/hr
17.	Conductive Test Specimen Heat Flow (Qc1)	109.21	Btu/hr
18.	Radiative Heat Flux of Test Specimen (qr1)	6.75	$Btu/hr \cdot ft^2 \cdot F$
19.	Convective Heat Flux of Test Specimen (qc1)	5.64	$Btu/hr \cdot ft^2 \cdot F$
20.	Standardized Warm Side Surface Conductance (hsth)	1.22	$Btu/hr \cdot ft^2 \cdot F$
21.	Standardized Cold Side Surface Conductance (hstc)	5.28	$Btu/hr \cdot ft^2 \cdot F$
22.	Standardized Thermal Transmittance (Ust)	0.17	$Btu/hr \cdot ft^2 \cdot F$

SECTION 10
TEST DURATION

1. The environmental systems were started at 12:25 hours, 04/13/21.
2. The test parameters were considered stable for two consecutive four hour test periods from 21:57 hours, 04/13/21 to 05:57 hours, 04/14/21.
3. The thermal performance test results were derived from 01:57 hours, 04/14/21 to 05:57 hours, 04/14/21.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

SECTION 11
GLAZING DEFLECTION

	FRAME EXT. / INT.
EDGE GAP WIDTH	0.72" / 0.72"
ESTIMATED CENTER GAP WIDTH upon receipt of specimen in laboratory (after stabilization)	0.78" / 0.75"
CENTER GAP WIDTH at laboratory ambient conditions on day of testing	0.78" / 0.75"
CENTER GAP WIDTH at test conditions	0.63" / 0.69"

Glass collapse determined using a digital glass and air space meter

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.

"This test method does not include procedures to determine the heat flow due to either air movement through the specimen or solar radiation effects. As a consequence, the thermal transmittance results obtained do not reflect performances which are expected from field installations due to not accounting for solar radiation, air leakage effects, and the thermal bridge effects that have the potential to occur due to the specific design and construction of the fenestration system opening. The latter can only be determined by in-situ measurements. Therefore, it is important to recognize that the thermal transmittance results obtained from this test method are for ideal laboratory conditions and should only be used for fenestration product comparisons and as input to thermal performance analyses which also include solar, air leakage and thermal bridge effects."

Required annual calibrations for the Intertek B&C, 'thermal test chamber' (ICN 000001) in York, Pennsylvania were last conducted in April 2020 in accordance with Intertek B&C calibration procedure. A CTS Calibration verification was performed October 2020. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed December 2020.

The reported Standardized Thermal Transmittance (Ust) was determined using CTS Method, per Section 9.2(A) of NFRC 102.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR ALUMINTECHNO, JLLC
Report No.: L3931.01-116-46 R0
Date: 04/15/21

SECTION 12
CTS CALIBRATION DATA

1.	CTS Test Date	12/18/19	
2.	CTS Size	21.53	ft^2
3.	CTS Glass/Core Conductance	0.42	$Btu/hr \cdot ft^2 \cdot F$
4.	Warm Side Air Temperature	69.81	F
5.	Cold Side Air Temperature	-0.39	F
6.	Warm Side Average Surface Temperature	54.17	F
7.	Cold Side Average Surface Temperature	3.65	F
8.	Convection Coefficient (Kc)	0.34	$Btu/(hr \cdot ft^2 \cdot F^{1.25})$
9.	Measured Cold Side Surface Conductance (hc)	5.23	$Btu/hr \cdot ft^2 \cdot F$
10.	Measured Thermal Transmittance	0.30	$Btu/hr \cdot ft^2 \cdot F$

ANSI/NCSL Z540-2-1997 type B uncertainty for this test was 2.79%.

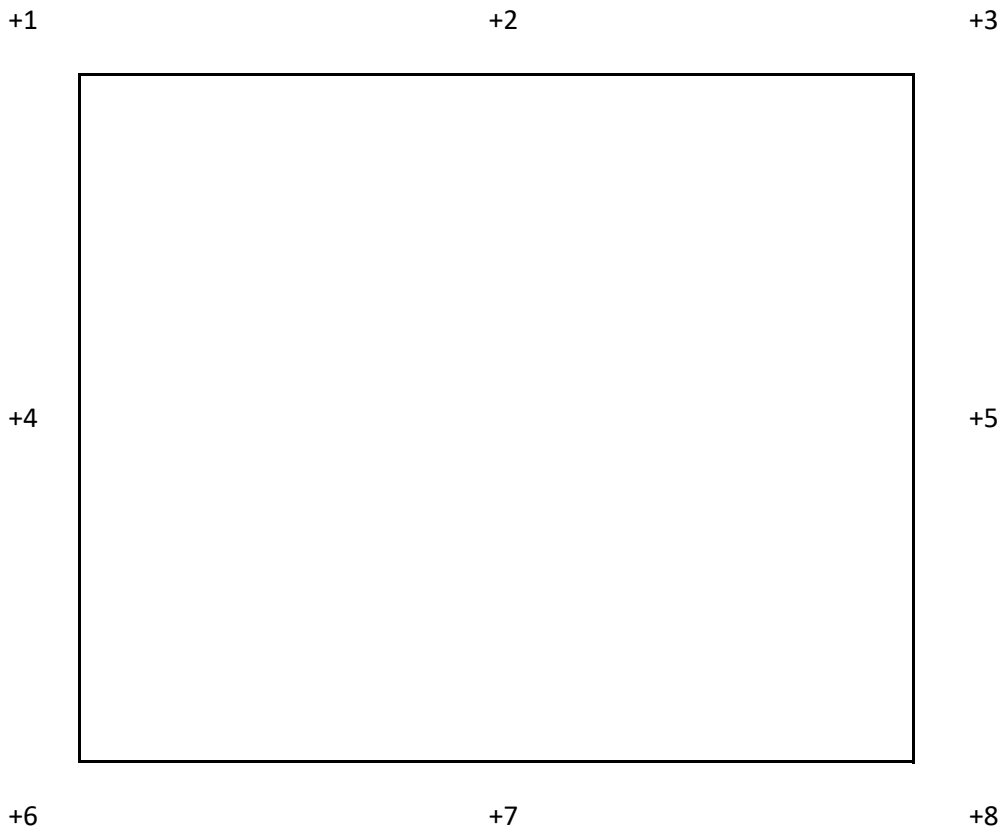
"Ratings included in this report are for submittal to an NFRC licensed IA for certification purposes and are not meant to be used for labeling purposes. Only those options identified on a valid Certificate of Authorization (CA) are to be used for labeling purposes."

The direction of heat transfer was from the interior (warm side) to the exterior (cold side) of the specimen. The ratings were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy. The data acquisition frequency is 5 minutes.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

SECTION 13
SURROUND PANEL WIRING DIAGRAM

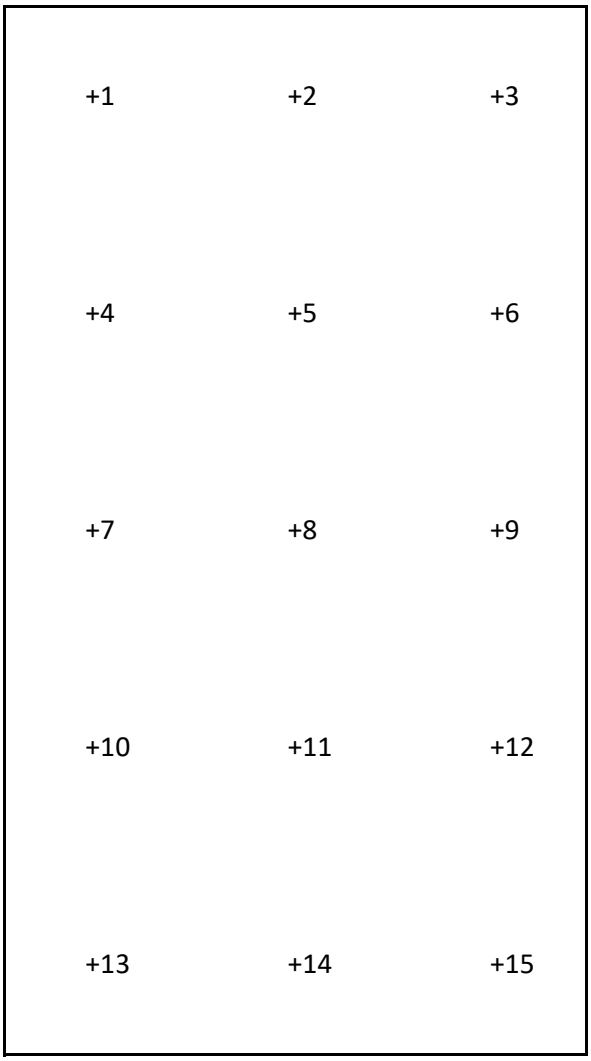


130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR ALUMINTECHNO, JLLC
Report No.: L3931.01-116-46 R0
Date: 04/15/21

SECTION 14
BAFFLE WIRING DIAGRAM

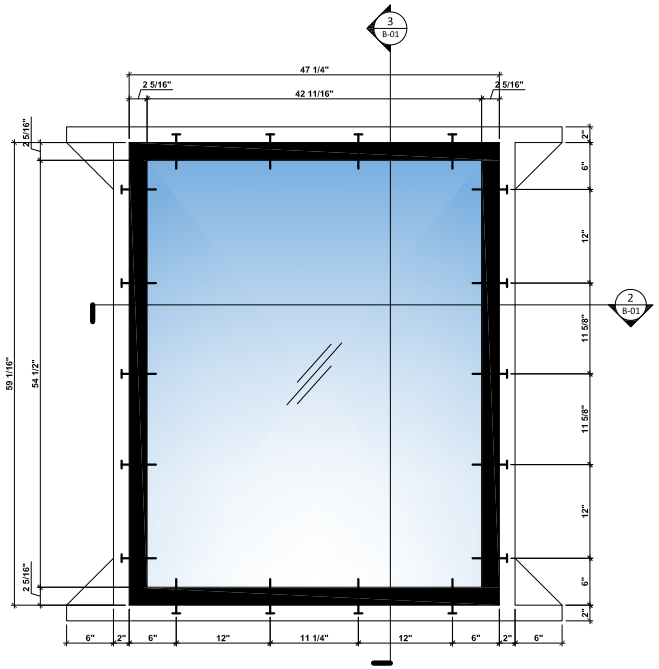


130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

SECTION 15
SUBMITTAL FORM AND DRAWINGS

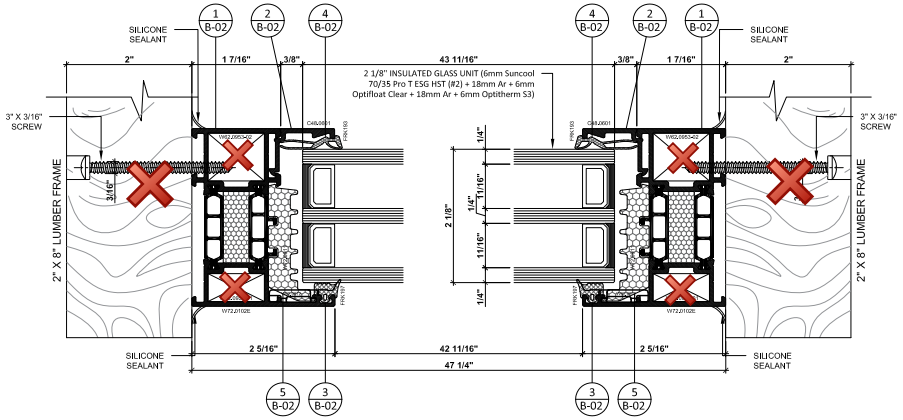
The test specimen drawings which follow have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



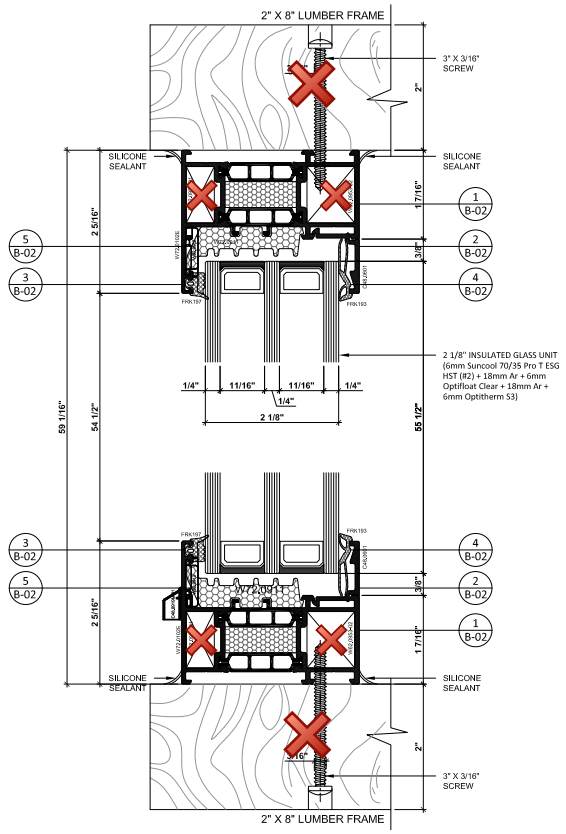
1 ALUMINUM WINDOW O6 ELEVATION
EXTERIOR VIEW
SCALE: 1-1/2" = 1'-0"

SYMBOL LEGEND:

3" X 3/16" SCREWS



2 SECTION
SCALE: 1'-0" = 1'-0"



3 SECTION
SCALE: 1'-0" = 1'-0"

intertek
Total Quality. Assured.

Report #: L3931-116-46
Date: 04/14/2021
Verified by: Ryan P. Moser

CLIENT:

...\3 comments\12-16-2020\logo.jpg

AluminTechno JLLC
12 Selitskogo Street, office 211
Minsk region, FEZ Minsk,
220075 BELARUS

PROJECT NAME:

47 1/4" X 59 1/16" ALUMINUM WINDOW O6

PREPARED BY:

PROJECT ADDRESS:

145 SHERWOOD AVENUE
FARMINGDALE,
NY 17406

DATE	REVISION	#

APPROVED

CLIENT'S SIGNATURE _____

DATE _____/_____/_____

ALL RIGHTS RESERVED

ALL DRAWINGS SPECIFICATIONS AND COPIES THERE OF FURNISHED BY ALUMINTECHNO JLLC ARE AND SHALL REMAIN ITS PROPERTY. THEY ARE NOT TO BE USED ON THIS OR ANY OTHER PROJECT UNLESS WRITTEN PERMISSION IS GIVEN.

SPECIAL NOTES:

DO NOT SCALE DRAWINGS

ALL DIMENSIONS TO BE FIELD VERIFIED PRIOR TO ANY FABRICATION.

DRAWING TITLE:

ASSEMBLY DRAWINGS AND SECTIONS

REVIEWED BY PROJECT MANAGER

BY:_____ DATE:_____

NOTE:_____

DIMENSIONS FIELD VERIFIED

BY:_____ DATE:_____

NOTE:_____

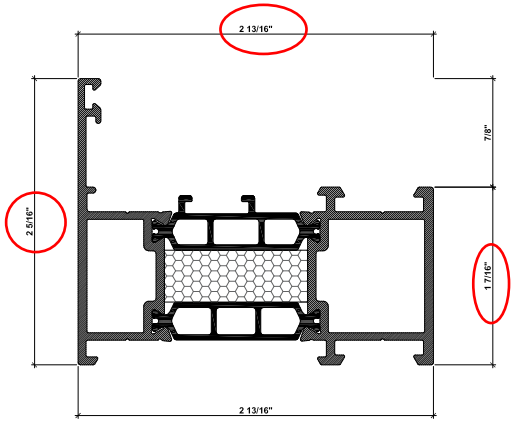
DATE: 12.16.2020

DRAWN BY: MV

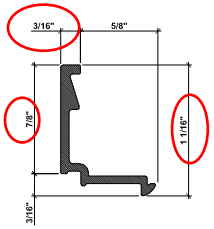
CHECKED BY: VS

DRAWING No: **SIZE: B**

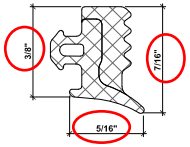
B-01



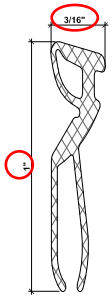
Material: Extruded Aluminum with Thermal Break
HEAD, BOTTOM, SIDE JAMBS MOLDING
1 EXTRUSION AYPC.W72.0102E
SCALE: 2'-0" = 1'-0"



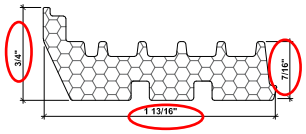
Material: Extruded Aluminum
BEAD PROFILE
2 EXTRUSION AYPC.C48.0601
SCALE: 2'-0" = 1'-0"



Material: Rubber
3 GASKET FRK197
SCALE: 4'-0" = 1'-0"



Material: Rubber
4 GASKET FRK193
SCALE: 4'-0" = 1'-0"



Material: PU
5 FOAM INSULATION W72.0911
SCALE: 2'-0" = 1'-0"

intertek
Total Quality. Assured.

Report #: L3931-116-46
Date: 04/14/2021
Verified by: Ryan P. Moser

CLIENT:

...\3 comments\12-16-2020\logo.jpg

AluminTechno JLLC
12 Selitskogo Street, office 211
Minsk region, FEZ Minsk,
220075 BELARUS

PROJECT NAME:

47 1/4" X 59 1/16" ALUMINUM WINDOW O6

PREPARED BY:

PROJECT ADDRESS:

145 SHERWOOD AVENUE
FARMINGDALE,
NY 17406

DATE	REVISION	#

APPROVED

CLIENT'S SIGNATURE _____

DATE _____ / _____ / _____

ALL RIGHTS RESERVED

ALL DRAWINGS SPECIFICATIONS AND COPIES THERE OF FURNISHED BY ALUMINTECHNO JLLC ARE AND SHALL REMAIN ITS PROPERTY. THEY ARE NOT TO BE USED ON THIS OR ANY OTHER PROJECT UNLESS WRITTEN PERMISSION IS GIVEN.

SPECIAL NOTES:

DO NOT SCALE DRAWINGS

ALL DIMENSIONS TO BE FIELD VERIFIED PRIOR TO ANY FABRICATION.

DRAWING TITLE:

INDIVIDUAL FRAME AND SASH COMPONENTS SECTIONS

REVIEWED BY PROJECT MANAGER

BY:_____ DATE:_____

NOTE:_____

DIMENSIONS FIELD VERIFIED

BY:_____ DATE:_____

NOTE:_____

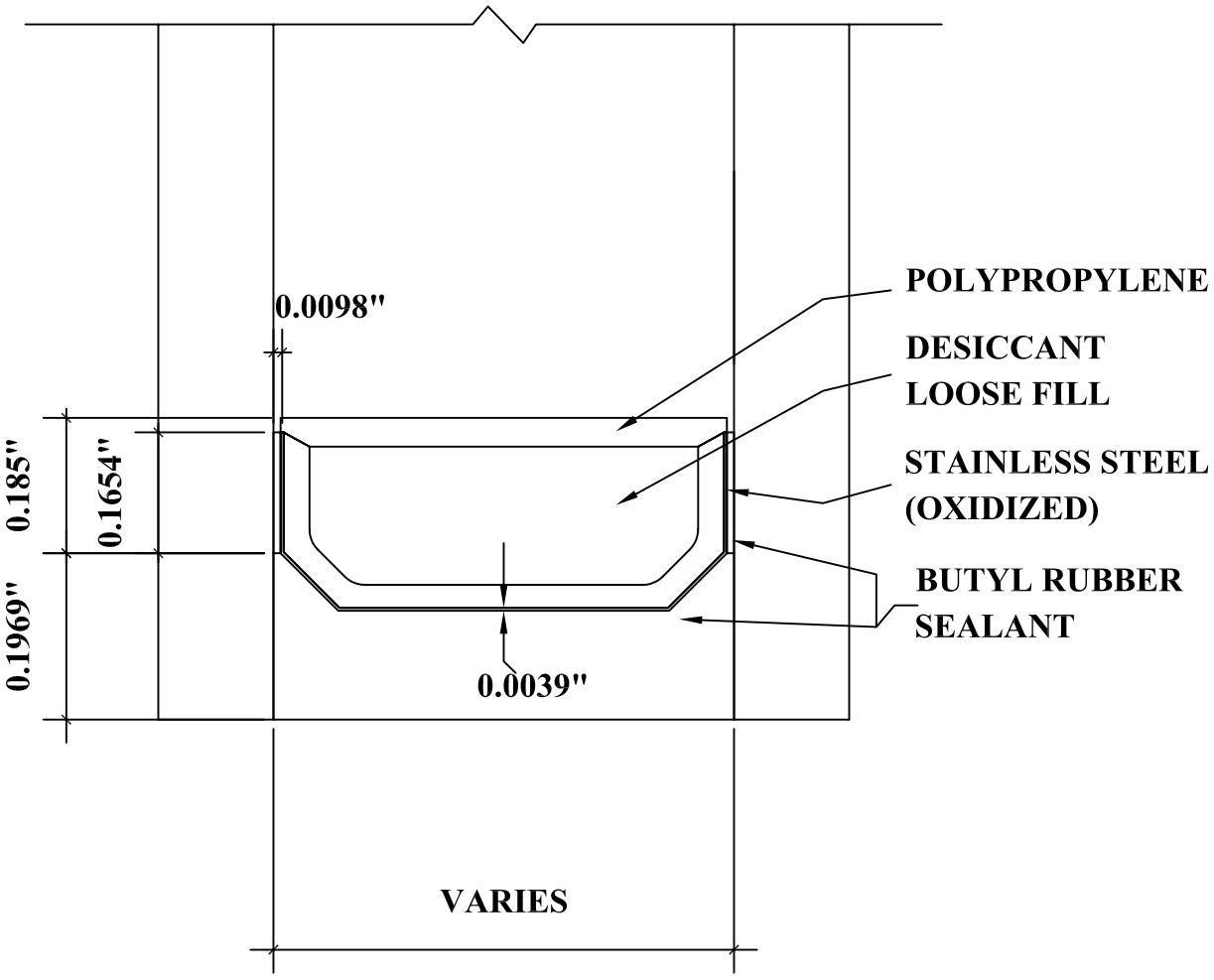
DATE: 12.16.2020

DRAWN BY: MV

CHECKED BY: VS

DRAWING No: SIZE: B

B-02



DETAIL FOR THERMAL MODELING OF
ENSINGER THERMIX TX.N SPACER (TS-D)

intertek
Total Quality. Assured.

Report #:	L3931-116-46
Date:	04/14/2021
Verified by:	Ryan P. Moser

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

SECTION 16
REVISION LOG

REVISION #	DATE	PAGES	REVISION
.01 R0	04/15/21	N/A	Original Report Issue