

**NFRC U-FACTOR & SOLAR HEAT GAIN COEFFICIENT (SHGC)
COMPUTER SIMULATION REPORT**

**Rendered to:
WISCONSIN SOLAR DESIGN**

**SERIES/MODEL:
Fixed - Vertical Punched**

Report Number: C2181.01-201-45
Report Date: 09/12/12
Expiration Date: 08/30/16

**NFRC U-FACTOR & SOLAR HEAT GAIN COEFFICIENT (SHGC)
COMPUTER SIMULATION REPORT**

Rendered to:
WISCONSIN SOLAR DESIGN
6349 Briarcliff Lane
Middleton, Wisconsin 53562

Report Number: C2181.01-201-45
Simulation Date: 08/30/12
Report Date: 09/12/12
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Project Summary:

Architectural Testing, Inc. was contracted to perform U-Factor and Solar Heat Gain Coefficient (SHGC) 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 below.

Standards:

NFRC 100-2010: Procedure for Determining Fenestration Product U-Factors
NFRC 200-2010: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

Software:

Frame and Edge Modeling: THERM 6.3.45
Center-of-Glass Modeling: WINDOW 6.3.62
Total Product Calculations: WINDOW 6.3.62
Spectral Data Library: N/A

Simulations Specimen Description:

Series/Model: Fixed - Vertical Punched
Type: Fixed, Four Sided
Frame Material: AT Aluminum with Thermal Break
Sash Material: N Not Applicable
Standard Size: 1200mm x 1500mm

Modeling Assumptions/Technical Interpretations:

- 1) U-Factor and SHGC values were calculated based on component test results provided by Wisconsin Solar Design.

Validation Matrix:

<i>Product Line</i>	<i>Report Number</i>
None	

Spacer Option Description

	<i>Sealant</i>		
<i>Spacer Type</i>	<i>Primary</i>	<i>Secondary</i>	<i>Code</i>
None			

Grid Option Description

<i>Grid Size</i>	<i>Grid Type</i>	<i>Grid Pattern</i>
None		

Reinforcement Option Description

<i>Location</i>	<i>Material</i>
None	

Gas Filling Technique Description

<i>Fill Type</i>	<i>Method</i>
None	

Edge-of-Glass Construction

<i>Interior Condition</i>	EPDM Gasket
<i>Exterior Condition</i>	Silicone with EPDM Gasket

Weatherstripping

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Pressure Gasket	2 Rows	Frame Perimeter

Frame/Sash Materials Finish

<i>Interior</i>	Painted Aluminum
<i>Exterior</i>	Painted Aluminum

**NFRC 100/200 Summary Sheet
Fixed - Vertical Punched**

1	LEXAN* THERMOCLEAR* Plus 2UV in opal (WH7A092X)					
	Overall Glazing Thickness	Glazing Type	Gap Fill	Spacer	Tint	Grid Description
	1.00"	Multi-wall	N/A	N	CL	None
	U-Factor		0.31		SHGC (N)	

*Registered trademark(s) of SABIC Innovative Plastics BV.

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.

Architectural Testing, Inc. is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The NFRC procedure requires that the computational results be verified through actual test results.

Detailed drawings, simulation data files, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. 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 Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

SIMULATED BY:

REVIEWED BY:

Michael P. Resech
Senior Project Manager

Heather M. Duneman
Senior Simulation Technician
Simulator-In-Responsible-Charge

MPR:mpr
C2181.01-201-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (4)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
01-R0	09/12/12	All	Original report issued. Work requested by Mr. Jeffery Smith of Wisconsin Solar Design.



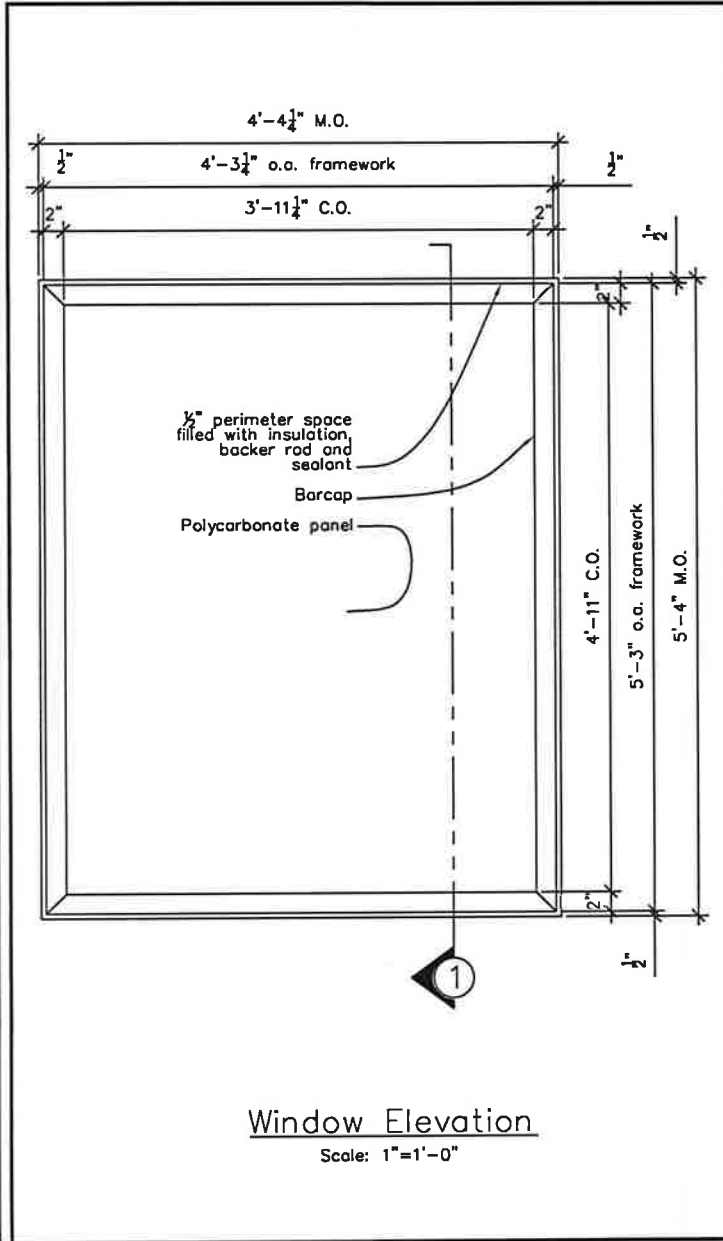
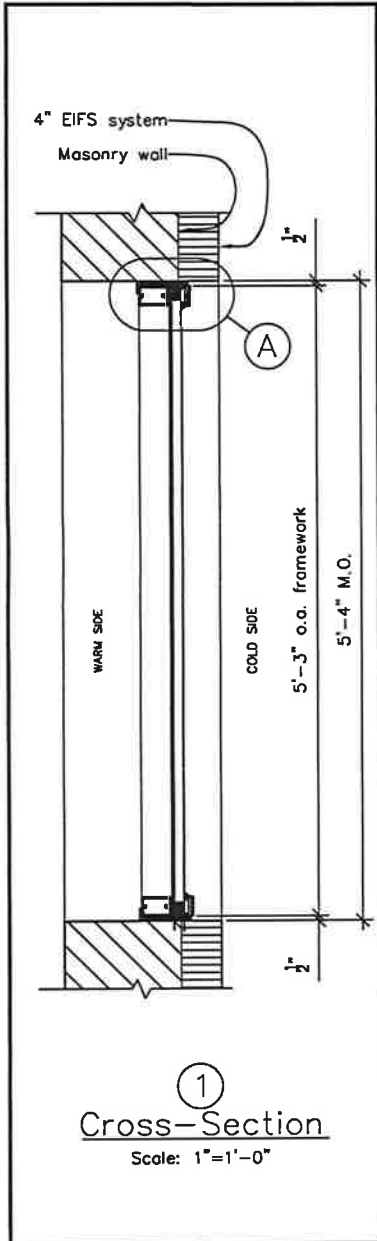
All drawings and Bills of Material used to simulate this product are enclosed in this Appendix

Appendix A

C2181.01-201-45

Test sample complies with these details.
 Deviations are noted.

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WINDOW SHOP DRAWINGS

FOR AAMA 1503-09 TEST FOR THERMAL TRANSMITTANCE & CONDENSATION RESISTANCE

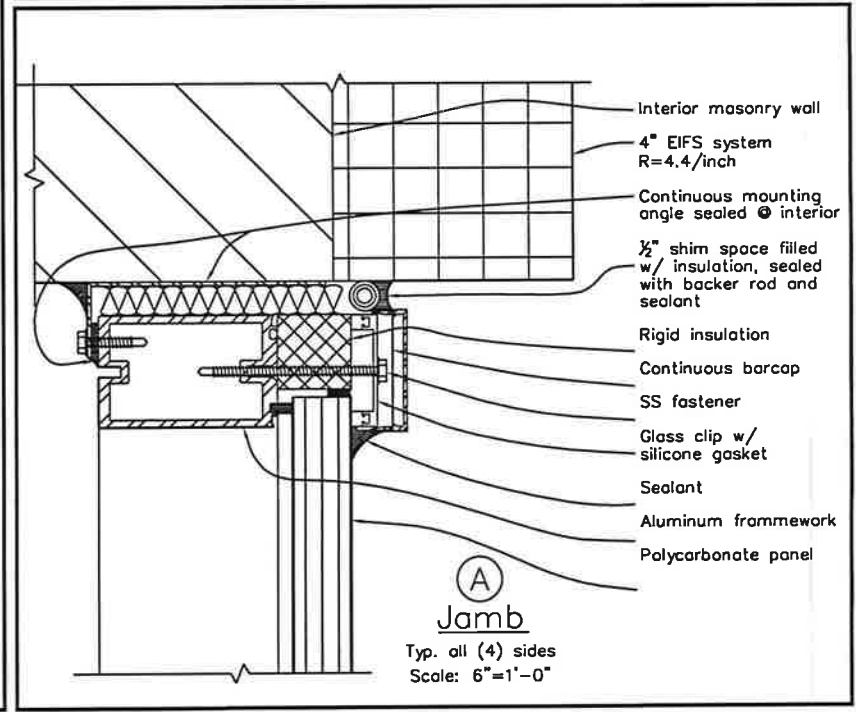
PRODUCT DATA:

Window sizes: 3'-11 1/4" X 4'-11" Clear Opening
Glazing: 25mm Opal Lexan Thermoclear structured polycarbonate. U-value: .26, Light Transmission: 50%, Shading coefficient: 0.59, Solar Transmission: 51.
Framework: Aluminum extrusions.
Sealant: Dow Corning 795 neutral cure silicone, ±50% flexibility.
Fasteners: 300 Series Stainless Steel.
Insulation: Extruded polystyrene.

Testing Agency:
 Architectural Testing
 849 Western Ave. North
 St. Paul, MN 55117

Manufacturer:
 WISCONSIN SOLAR DESIGN
 6349 Briardiff Ln., Middleton, WI 53562

1 of 1
 Issued:
 7/12/12



4'-4 $\frac{1}{4}$ " M.O.

1/2"

4'-3 $\frac{1}{4}$ " o.a. framework

1/2"

2"

3'-11 $\frac{1}{4}$ " C.O.

2"

1/2"

1/2" perimeter space filled with insulation, backer rod and sealant

Barcap

Polycarbonate panel

4'-11" C.O.

5'-3" o.a. framework

5'-4" M.O.

2"

1/2"



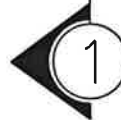
Architectural Testing

Test sample complies with these details. Deviations are noted.

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Tech. [Signature]

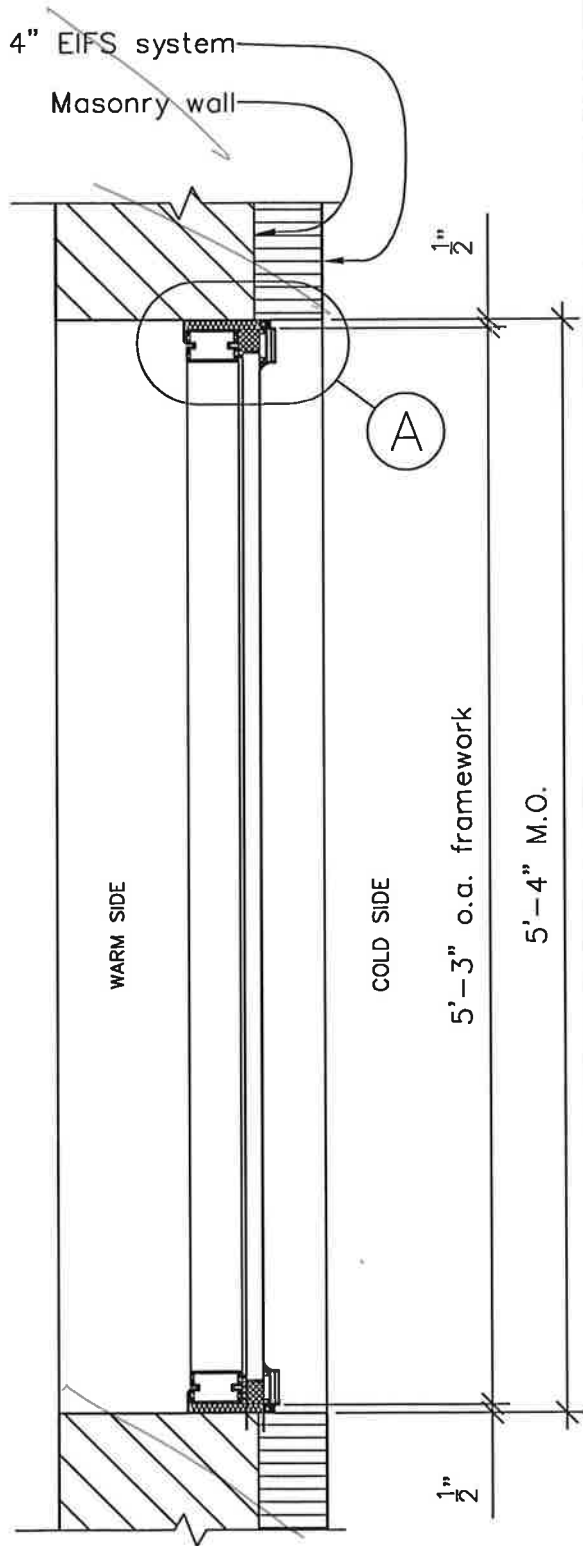


Window Elevation

Scale: 1"=1'-0"

Test Arc 849 St.





1

Cross-Section

Scale: 1"=1'-0"

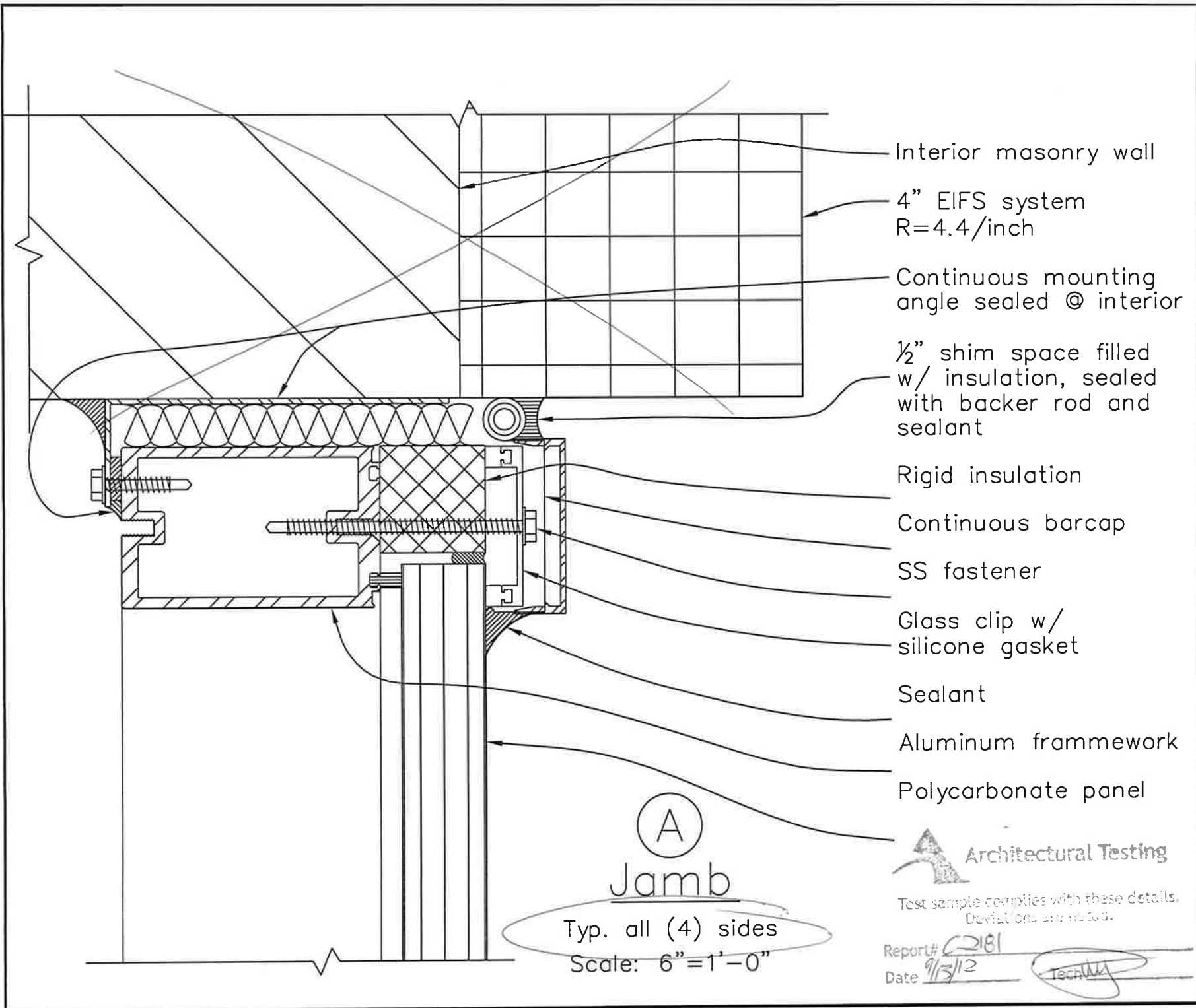


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Tech.



- Interior masonry wall
- 4" EIFS system
R=4.4/inch
- Continuous mounting
angle sealed @ interior
- 1/2" shim space filled
w/ insulation, sealed
with backer rod and
sealant
- Rigid insulation
- Continuous barcap
- SS fastener
- Glass clip w/
silicone gasket
- Sealant
- Aluminum framework
- Polycarbonate panel

(A)
Jamb

Typ. all (4) sides
Scale: 6"=1'-0"

 Architectural Testing

Test sample complies with these details.
Deviations are noted.

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