

# MILLENNIUM FORMS, LLC TEST REPORT

## SCOPE OF WORK

ASTM E283, ASTM E331, AND ASTM E330/E330M TESTING ON  
304 STAINLESS STEEL CUPPED, WALL TILES

## REPORT NUMBER

L5734.02-109-44

## TEST DATE(S)

12/01/20 - 12/03/20

## ISSUE DATE

01/25/21

## RECORD RETENTION END DATE

12/03/24

## PAGES

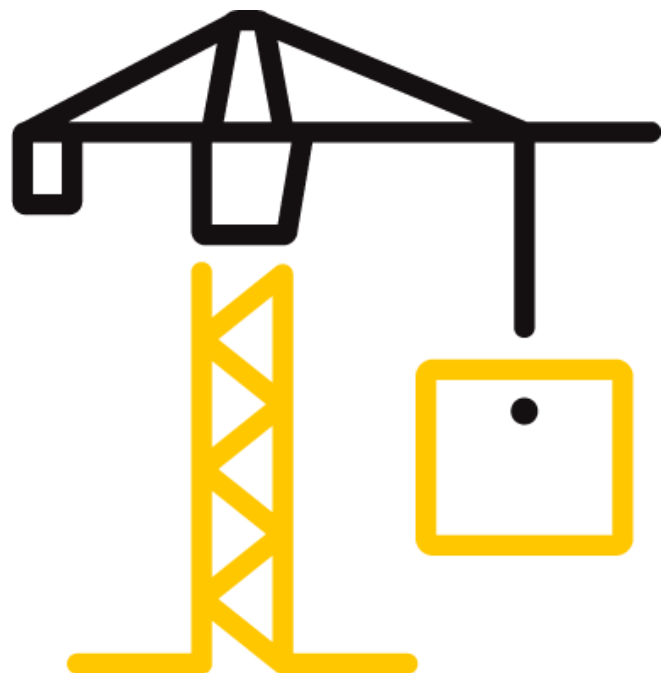
15

## DOCUMENT CONTROL NUMBER

ATI 00479 (07/24/17)

RT-R-AMER-Test-2805

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## TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5734.02-109-44

Date: 01/25/21

### REPORT ISSUED TO

#### MILLENNIUM FORMS, LLC

550 East Centralia Street  
Elkhorn, Wisconsin 53121

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted by Millennium Forms, LLC to perform testing in accordance with ASTM E283, ASTM E331, and ASTM E330/E330M on their 304 Stainless Steel Cupped, wall tiles. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek B&C test facility in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

**COMPLETED BY:** Andrew P. Mehalick

**TITLE:** Technician –  
Product Testing

**SIGNATURE:**   
Digitally Signed by: Andrew Mehalick

**DATE:** 01/25/21

**REVIEWED BY:** Timothy J. McGill

**TITLE:** Manager – Product Testing

**SIGNATURE:**   
Digitally Signed by: Timothy J. McGill

**DATE:** 01/25/21

APM:nls

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## TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5734.02-109-44

Date: 01/25/21

### SECTION 2

#### TEST METHOD(S)

The specimens were evaluated in accordance with the following:

**ASTM E283-04(2012)**, *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

**ASTM E330/E330M-14**, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

**ASTM E331-00(2016)**, *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*

### SECTION 3

#### MATERIAL SOURCE/INSTALLATION

Test specimen were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

### SECTION 4

#### EQUIPMENT

Tape Measure Verification: 63788

Control Panel: 005406

Water Spray Rack: 003956-D

Weather Station: INT00549

Linear Transducers: 64306, 64278, 64460

### SECTION 5

#### LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Timothy J. McGill	Intertek B&C
Andrew P. Mehalick	Intertek B&C

## TEST REPORT FOR MILLENNIUM FORMS, LLC

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### SECTION 6

#### TEST SPECIMEN DESCRIPTION

**Product Type:** Wall Tiles

**Series/Model:** 304 Stainless Steel Cupped

#### Product Size(s):

OVERALL AREA:	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
3.0 m <sup>2</sup> (32.0 ft <sup>2</sup> )				
Overall size	1219	48	2438	96
Largest tile size	375	14-3/4	248	9-3/4
Large intermediate tile size	292	11-1/2	248	9-3/4
Small intermediate tile size	184	7-1/4	248	9-3/4
Smallest tile size	76	3	248	9-3/4

**Test Wall Construction:** The wood test wall was 48" wide by 96" high and constructed with 2x8 Spruce-Pine-Fir construction lumber at the perimeter with studs located 16" on center. The test wall was sheathed with 5/8" thick five-ply plywood secured to the test wall with #8 x 1-5/8" screws located 2" from each end and on 8" center. Two stainless steel J-channels were attached to the sides of the test wall with #10 x 1" pan head screws spaced 1" from each end and 16" on center. A stainless steel starter strip was attached to the bottom of the test wall with #10 x 1" pan head screws. The screws were spaced 1" from each end and 8" on center.

**Wall Tile Construction:** The tiles were constructed from formed 0.015" thick 304 stainless steel. A male interlock was utilized on the bottom and right side of the tile and a female interlock on the top and left side of the tile. The tiles were secured with #10 x 1" pan head screws located 3/4" from the ends at the top of each tile.

## TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5734.02-109-44

Date: 01/25/21

### SECTION 7

#### TEST RESULTS

The temperature range during testing was 16°C - 20°C (60°F - 68°F). The results are tabulated as follows:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
<b>Air Leakage,</b> Infiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> )	Report only	1
<b>Air Leakage,</b> Infiltration per ASTM E283 at 300 Pa (6.27 psf)	<0.1 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> )	Report only	1
<b>Air Leakage,</b> Exfiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> )	Report only	1
<b>Air Leakage,</b> Exfiltration per ASTM E283 at 300 Pa (6.27 psf)	<0.1 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> )	Report only	1
<b>Water Penetration,</b> per ASTM ASTM E331 at 300 Pa (6.27 psf)	Pass	No leakage	
<b>Uniform Load Deflection,</b> per ASTM E330 Deflections taken at the center of a tile +5554 Pa (+116.0 psf) -5554 Pa (-116.0 psf)	1.0 mm (0.04") 5.6 mm (0.22")	Report only	2, 3
<b>Uniform Load Structural,</b> per ASTM E330 Permanent set taken at the center of a tile +8259 Pa (+172.5 psf) -8259 Pa (-172.5 psf)	<0.3 mm (<0.01") 1.5 mm (0.06")	Report only	2, 3



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130 Derry Court  
York, Pennsylvania 17406

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## TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5734.02-109-44

Date: 01/25/21

**General Note:** *All testing was performed in accordance with the referenced standard(s).*

*Note 1: Test Date 12/01/20 / Time: 11:35 AM*

*Note 2: Loads were held for 30 seconds.*

*Note 3: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.*

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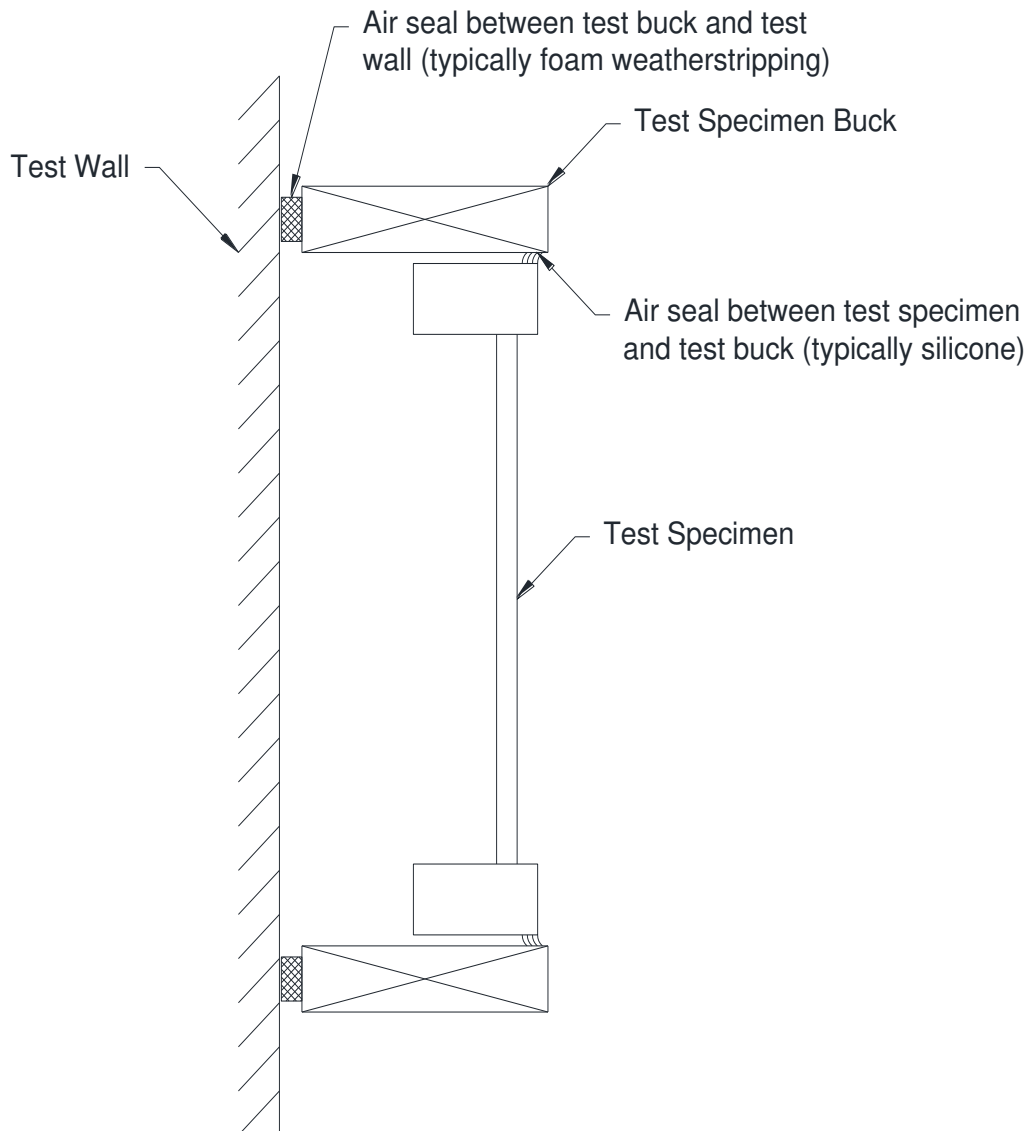
Report No.: L5734.02-109-44

Date: 01/25/21

### SECTION 8

#### LOCATION OF AIR SEAL

The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.



## TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5734.02-109-44

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### SECTION 9

#### PHOTOGRAPH



**Photo No. 1**  
**Test Specimen Prior to Testing**





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## **TEST REPORT FOR MILLENNIUM FORMS, LLC**

Report No.: L5734.02-109-44

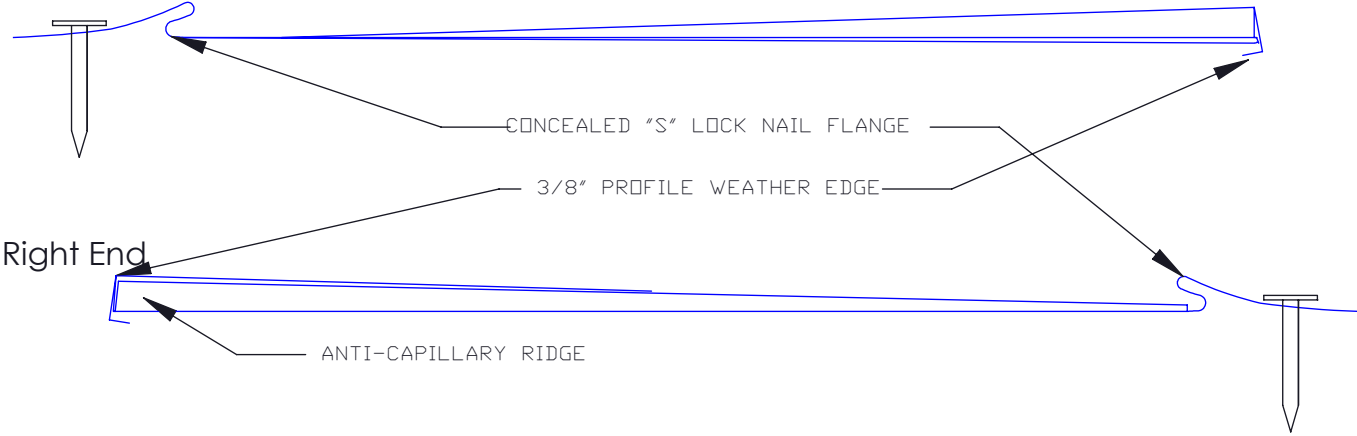
Date: 01/25/21

### **SECTION 10**

#### **DRAWINGS**

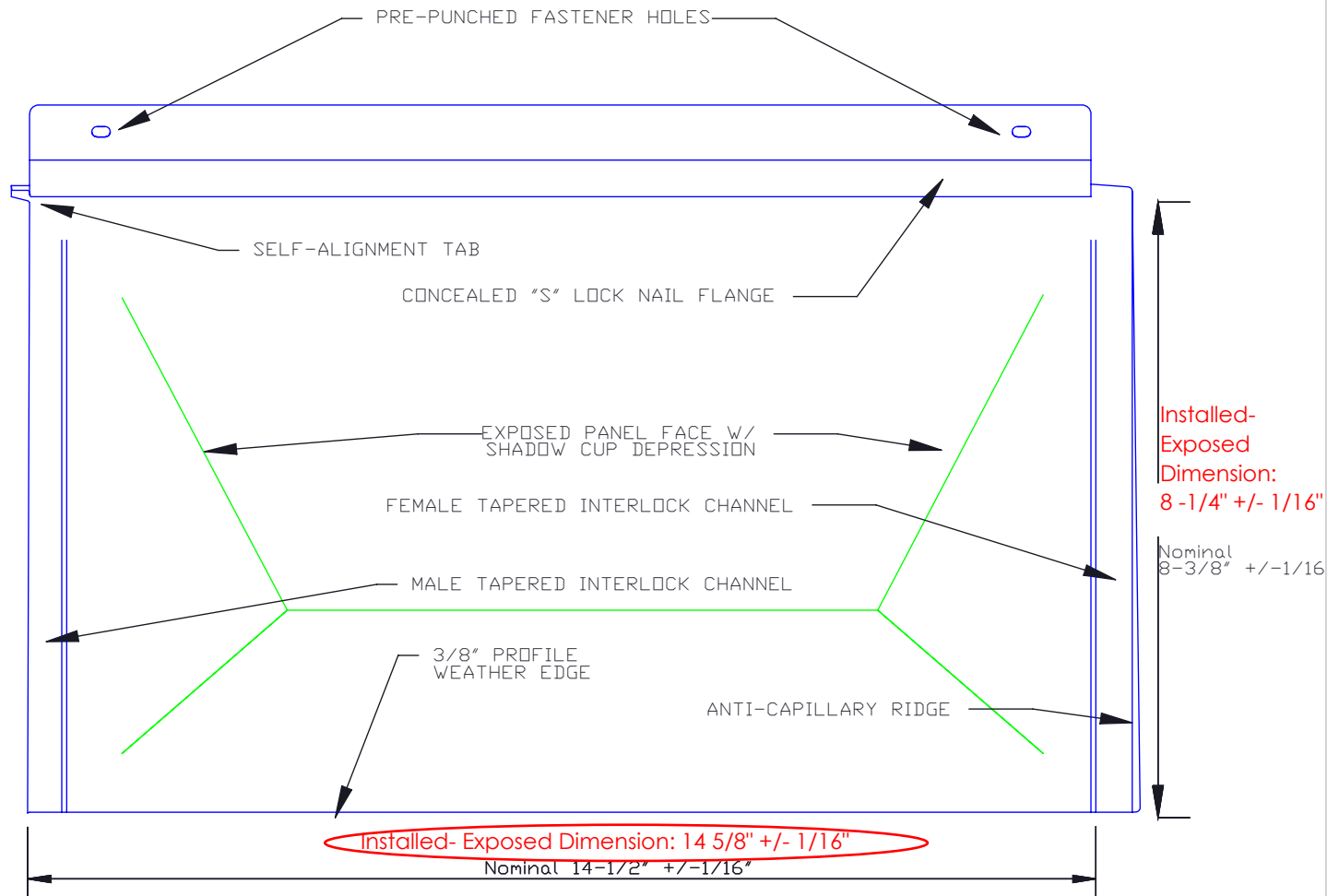
The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

Left End



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Date: 12/14/2020  
Verified by: *Andrew P. Mahabadi*



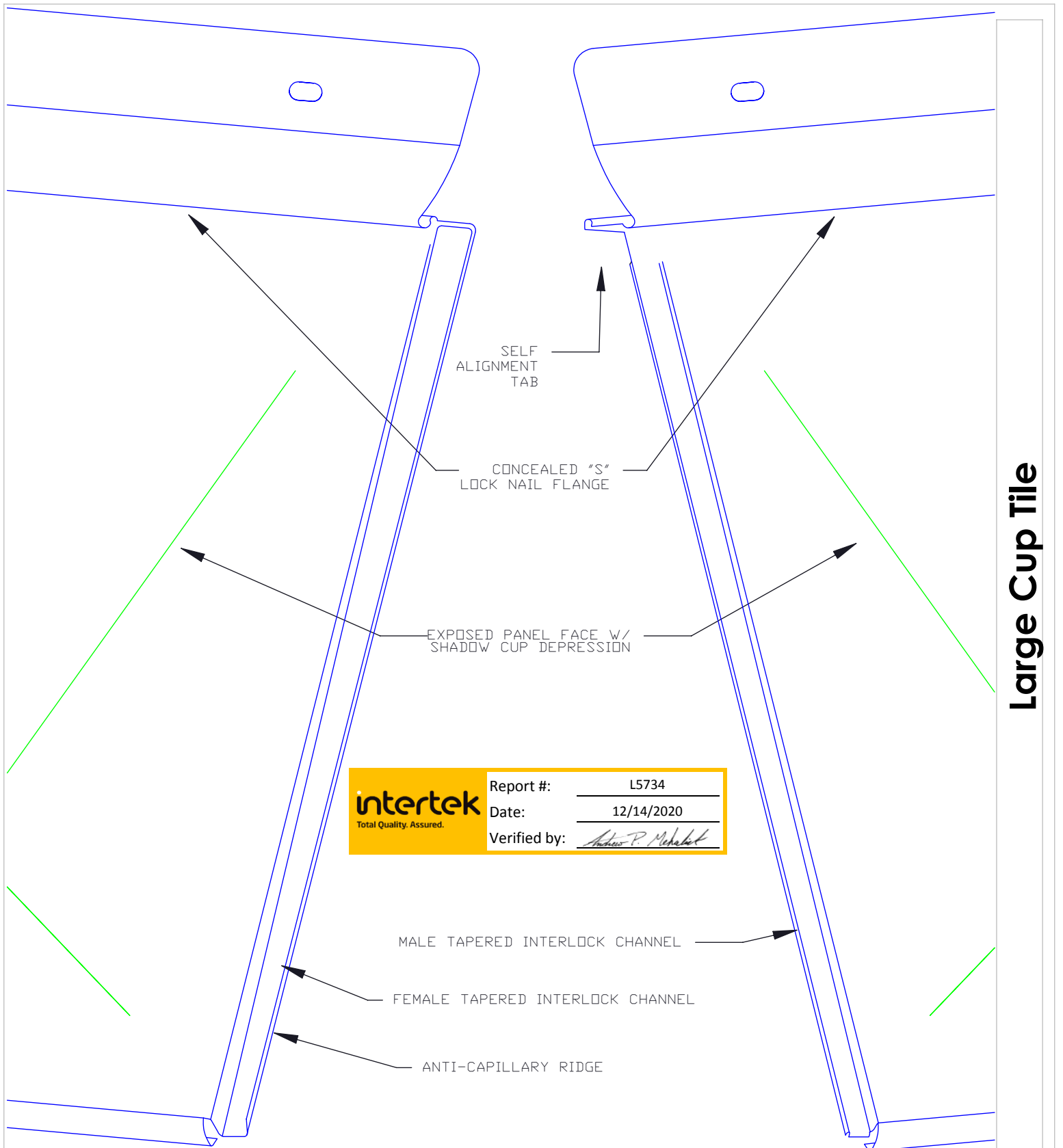
**Large Cup Tile**

## Profile Details

1

 <b>MILLENNIUM</b> F O R M S	Material	Sizes	Finish	Colors
	Stainless Steel	8 3/8" x 14 1/2" 0.018" +/- .002	Bright (BA) Mill (2B)	See color selection chart
	Zalmag	8 3/8" x 14 1/2" 0.018" +/- .002	Natural Pre-patina II Black	See color selection chart


Revised 12/10/20



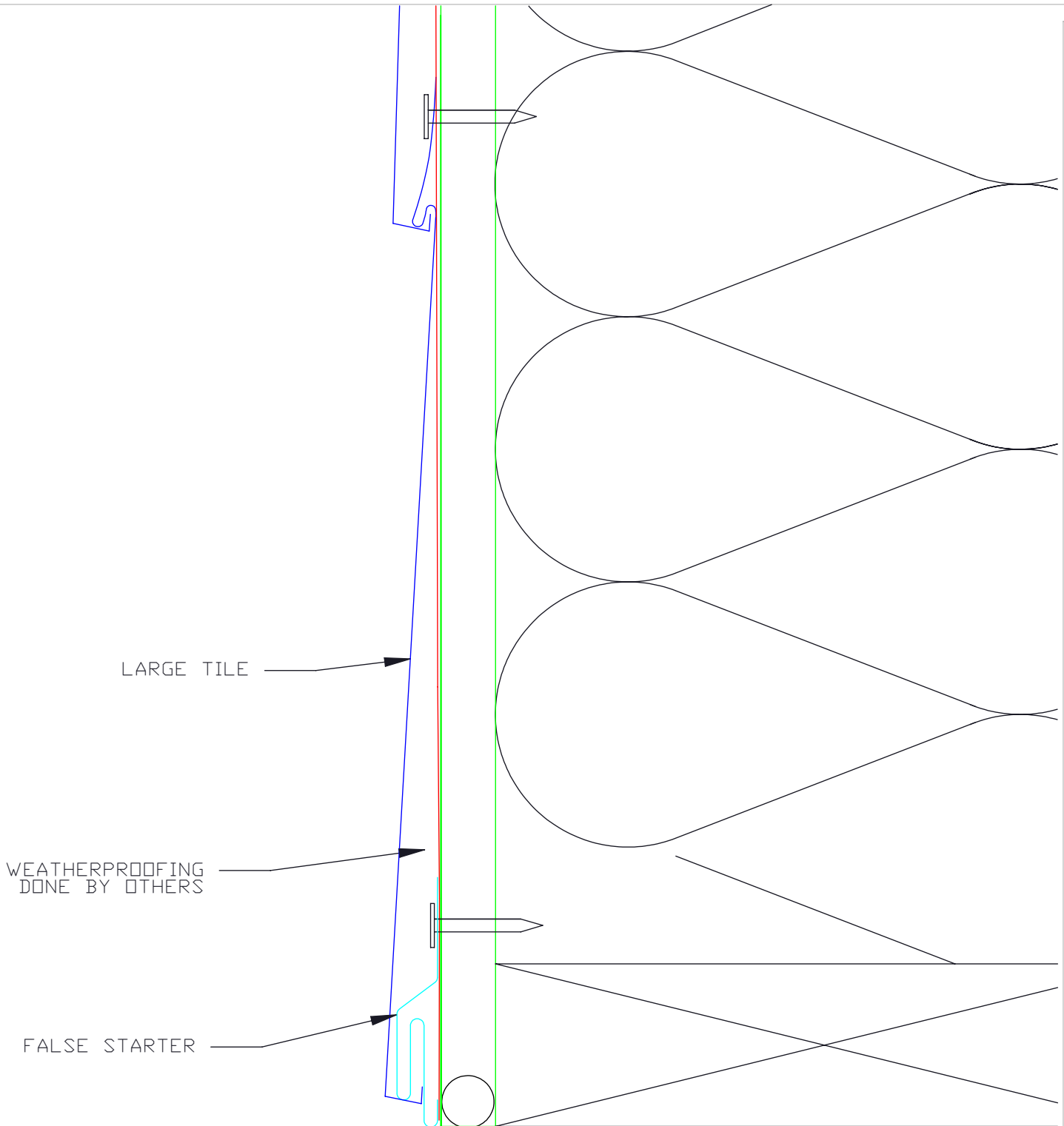
Large Cup Tile

## Vertical Joint Detail

2

 <b>MILLENNIUM</b> F O R M S	Material	Sizes	Finish	Colors
	Stainless Steel	8 3/8" x 14 1/2" 0.018" +/- .002	Bright (BA) Mill (2B)	See color selection chart
	Zalmag	8 3/8" x 14 1/2" 0.018" +/- .002	Natural Pre-patina II Black	See color selection chart

Revised 12/10/20






Report #: L5734

Date: 12/14/2020

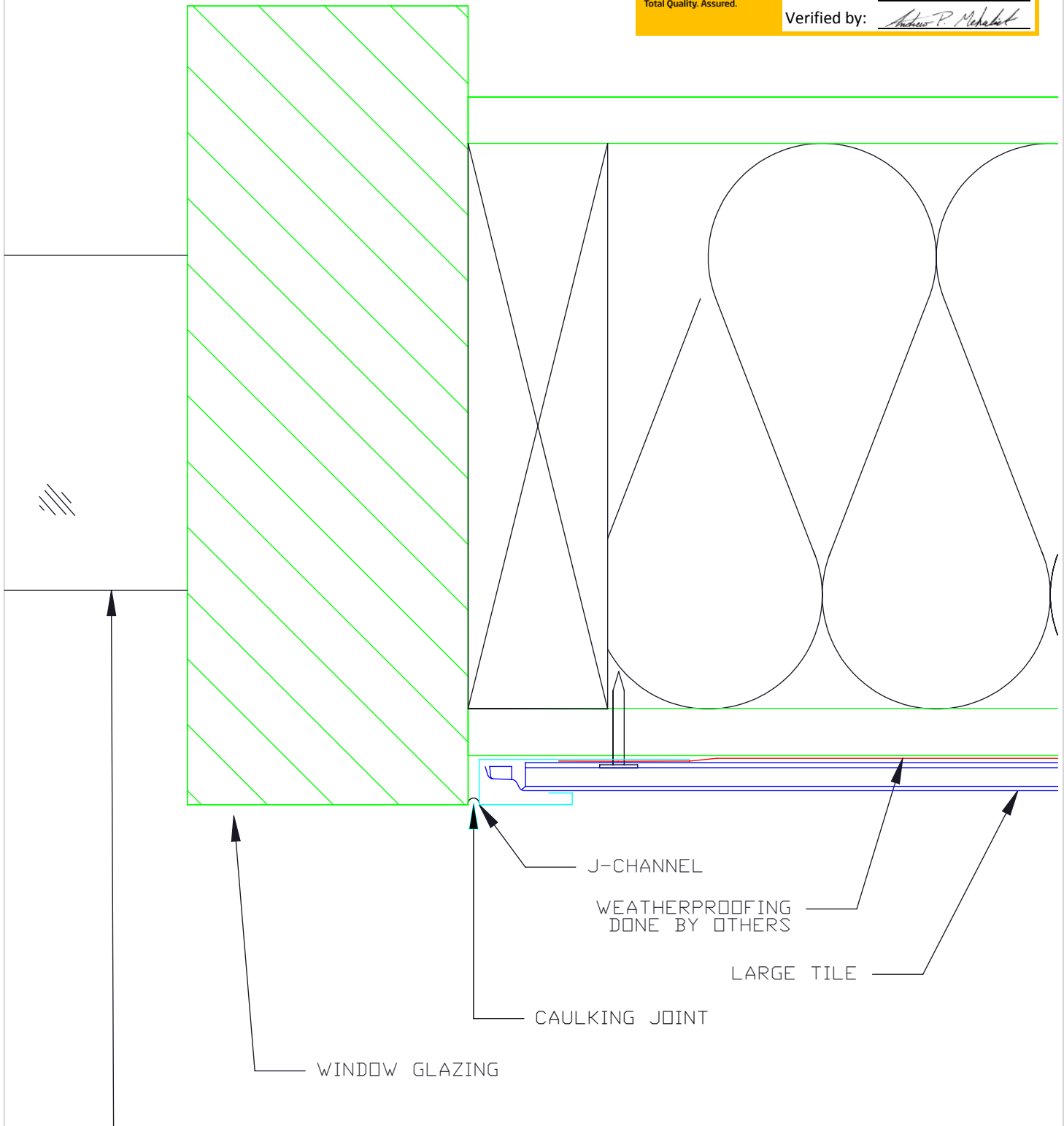
Verified by: *Andrew P. Mahabadi*

## Starter/False Starter

4

 <b>MILLENNIUM</b> F O R M S	Material	Sizes	Finish	Colors
	Stainless Steel	8 3/8" x 14 1/2" 0.018" +/- .002	Bright (BA) Mill (2B)	See color selection chart
	Zalmag	8 3/8" x 14 1/2" 0.018" +/- .002	Natural Pre-patina II Black	See color selection chart


Revised 12/10/20



**Large Cup Tile**

## Window Jam

7

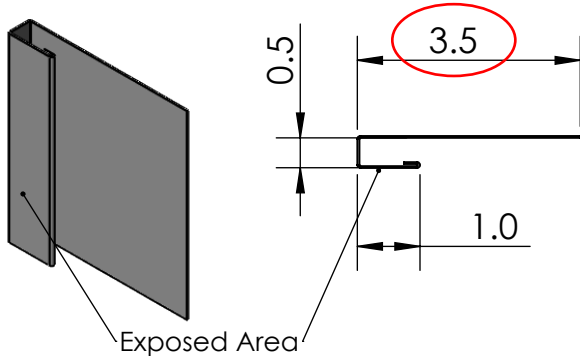
 <b>MILLENNIUM</b> F O R M S	Material	Sizes	Finish	Colors
	Stainless Steel	8 3/8" x 14 1/2" 0.018" +/- .002	Bright (BA) Mill (2B)	See color selection chart
	Zalmag	8 3/8" x 14 1/2" 0.018" +/- .002	Natural Pre-patina II Black	See color selection chart

Revised 12/10/20

## J-Channel

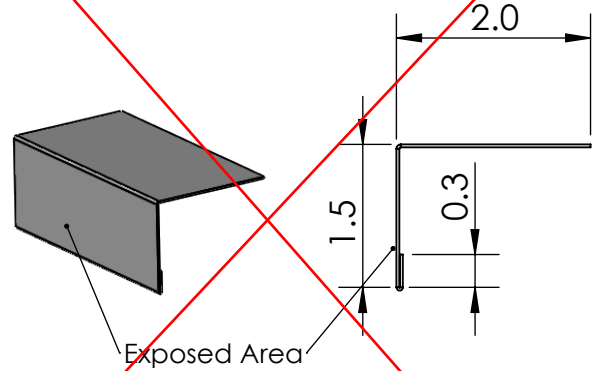


Report #: L5734  
Date: 12/14/2020  
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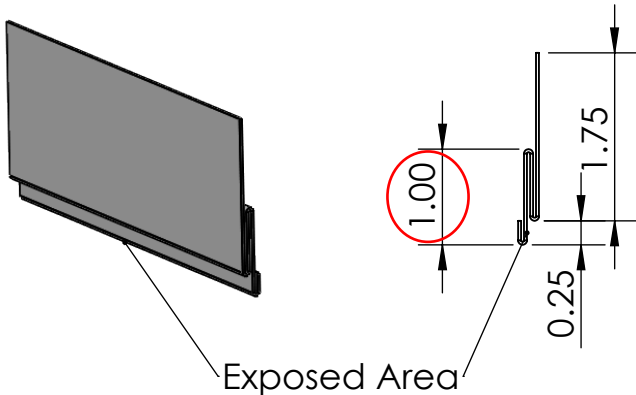
Initials: \_\_\_\_\_  
Linear 10-ft Quantity: \_\_\_\_\_

## ~~Sill~~



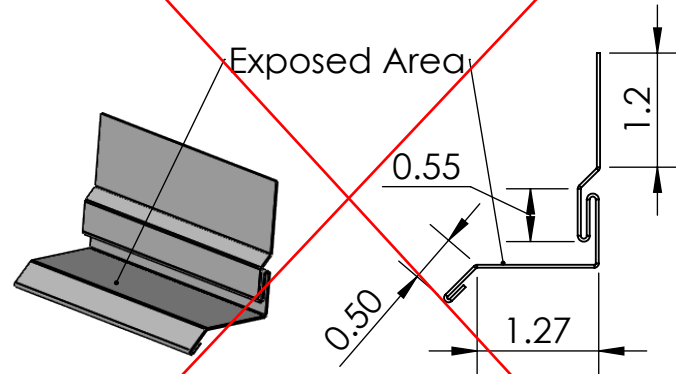
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Linear 10-ft Quantity: \_\_\_\_\_

## False Starter



Initials: \_\_\_\_\_  
Linear 10-ft Quantity: \_\_\_\_\_

## ~~Window Head~~



Initials: \_\_\_\_\_  
Linear 10-ft Quantity: \_\_\_\_\_

**Standard Wall Flashing**

See pages 2 and 3 for inside and outside corner options and details

See page 5 to sketch custom flashing details

## Millennium Forms Standards

1

 <b>MILLENNIUM</b> F O R M S	Material	Sizes	Finish	Colors
	Stainless Steel 24 ga.	Sold in 10-ft sections	Bright (BA), Mill (2B)	See color selection chart online
	Zalmag 24 ga.	Sold in 10-ft sections	Natural, Pre-Patina II, Black	N/A



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Report No.: L5734.02-109-44

Date: 01/25/21

### SECTION 11

#### REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	01/25/21	N/A	Original Report Issue