

MILLENNIUM FORMS, LLC FLORIDA BUILDING CODE TEST REPORT

SCOPE OF WORK

TAS 202 AND TAS 203 TESTING ON 304 STAINLESS STEEL CUPPED, WALL TILES

REPORT NUMBER

L5734.01-109-18

TEST DATE(S)

12/01/20 – 12/03/20

ISSUE DATE

01/25/21

RECORD RETENTION END DATE

12/03/30

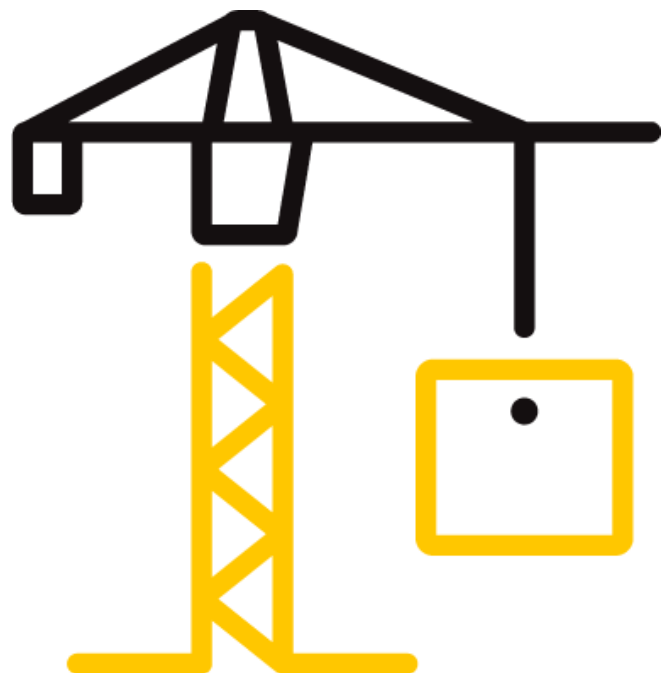
PAGES

18

DOCUMENT CONTROL NUMBER

RT-R-AMER-Test-2816 (02/22/19)

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TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5734.01-109-18

Date: 01/25/21

REPORT ISSUED TO

MILLENNIUM FORMS, LLC

550 East Centralia Street
Elkhorn, Wisconsin 53121

SECTION 1

SCOPE

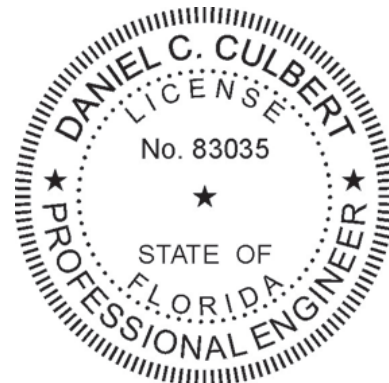
Intertek Building & Construction (B&C) was contracted by Millennium Forms, LLC to perform TAS 202 and TAS 203 testing in accordance with Florida Building Code for High Velocity Hurricane Zone requirements on their 304 Stainless Steel Cupped, wall tiles. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the 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.

SECTION 2

SUMMARY OF TEST RESULTS


The specimen(s) tested met the performance requirements set forth in the protocols.

SPEC.	TEST PROTOCOL	DESIGN PRESSURE
1	TAS 202	+116.0 / -116.0 psf
2	TAS 203	+116.0 / -116.0 psf
3	TAS 203	+116.0 / -116.0 psf
4	TAS 203	+116.0 / -116.0 psf



For INTERTEK B&C:

COMPLETED BY:	Andrew P. Mehalick
TITLE:	Technician – Product Testing
SIGNATURE:	 <small>Digitally Signed by: Andrew Mehalick</small>
DATE:	01/25/21

REVIEWED BY:	Daniel C. Culbert, P.E.
TITLE:	Senior Project Engineer
SIGNATURE:	 <small>Digitally Signed by: Daniel C. Culbert</small>
DATE:	01/25/21

APM:nls

2021.01.25 16:41:36 -05'00'

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SECTION 3**TEST METHOD(S)**

The specimens were evaluated in accordance with the following:

TAS 202-94, *Criteria for Testing Impact & Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure*

TAS 203-94, *Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*

SECTION 4**MATERIAL SOURCE**

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

SECTION 5**EQUIPMENT**

Tape Measure Verification: 63788

Weather Station: INT00549

Blower: 005406

Cycling Mechanism: Computer controlled centrifugal blower with electronic pressure measuring device

Deflection Measuring Device: Linear transducers

SECTION 6**LIST OF OFFICIAL OBSERVERS**

NAME	COMPANY
Timothy J. McGill	Intertek B&C
Daniel C. Culbert, P.E.	Intertek B&C
Andrew P. Mehalick	Intertek B&C

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SECTION 7

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 ² (32.0 ft ²)				
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.

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SECTION 8

TEST RESULTS

Protocol TAS 202-94, Static Air Pressure

Test Date: 12/01/20

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

Test Specimen #1: Preload and Design Load per TAS 202

LOAD (psf)	INDICATOR LOCATION	DEFLECTION (in.)		PERMANENT SET (in.)	
		MEASURED	ALLOWED	MEASURED	ALLOWED
+87.5 50% of Test Pressure	1	0.28	N/A	0.01	N/A
	2	0.29	N/A	0.01	N/A
	3	0.24	N/A	0.01	N/A
+116.0 Design Pressure	1	0.35	N/A	0.02	N/A
	2	0.37	N/A	0.02	N/A
	3	0.31	N/A	0.01	N/A
-87.5 50% of Test Pressure	1	0.48	N/A	0.10	N/A
	2	0.65	N/A	0.10	N/A
	3	0.47	N/A	0.09	N/A
-116.0 Design Pressure	1	0.70	N/A	0.16	N/A
	2	0.90	N/A	0.15	N/A
	3	0.67	N/A	0.16	N/A

Test Specimen #1: Structural Overload Load per TAS 202

LOAD (psf)	INDICATOR LOCATION	DEFLECTION (in.)		PERMANENT SET (in.)	
		MEASURED	ALLOWED	MEASURED	ALLOWED
+172.5 Test Pressure	1	0.49	N/A	0.03	N/A
	2	0.52	N/A	0.03	N/A
	3	0.44	N/A	0.03	N/A
-172.5 Test Pressure	1	1.16	N/A	0.27	N/A
	2	1.37	N/A	0.35	N/A
	3	1.15	N/A	0.32	N/A

Notes:

Positive and negative uniform static load test loads were held for 30 seconds.

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.

See Sketch No. 1 for indicator locations.

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Protocol TAS 203-94, Cyclic Wind Pressure Loading
Test Date(s): 12/02/20 through 12/03/20

The temperature range during testing was 14°C - 18°C (58°F - 64°F). The results are tabulated as follows:

Test Specimen #2: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE		
+116.0 / 116.0 psf	1	2	3
POSITIVE PRESSURE RANGE (psf)	0 – 58.0	0 – 69.6	0 – 150.8
AVERAGE CYCLE TIME (sec.)	2.84	3.01	N/A
NUMBER OF CYCLES	600	70	1
	4	5	6
NEGATIVE PRESSURE RANGE (psf)	0 – 58.0	0 – 69.6	0 – 150.8
AVERAGE CYCLE TIME (sec.)	2.88	3.04	N/A
NUMBER OF CYCLES	600	70	1

Test Specimen #2: Positive Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)	PERCENT RECOVERY	
			MEASURED %	ALLOWED %
1	0.57	0.04	93	> 90
2	0.58	0.05	91	> 90
3	0.49	0.03	94	> 90

Test Specimen #2: Negative Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)	PERCENT RECOVERY	
			MEASURED %	ALLOWED %
1	1.01	0.10	90	> 90
2	1.10	0.11	90	> 90
3	0.75	0.07	90	> 90

Note: See Sketch No. 1 for indicator locations.

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Test Specimen #3: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE		
+116.0 / 116.0 psf	1	2	3
POSITIVE PRESSURE RANGE (psf)	0 – 58.0	0 – 69.6	0 – 150.8
AVERAGE CYCLE TIME (sec.)	2.87	2.98	N/A
NUMBER OF CYCLES	600	70	1
	4	5	6
NEGATIVE PRESSURE RANGE (psf)	0 – 58.0	0 – 69.6	0 – 150.8
AVERAGE CYCLE TIME (sec.)	2.72	2.78	N/A
NUMBER OF CYCLES	600	70	1

Test Specimen #3: Positive Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)	PERCENT RECOVERY	
			MEASURED %	ALLOWED %
1	0.61	0.05	92	> 90
2	0.70	0.06	91	> 90
3	0.60	0.05	92	> 90

Test Specimen #3: Negative Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)	PERCENT RECOVERY	
			MEASURED %	ALLOWED %
1	1.09	0.11	90	> 90
2	1.25	0.13	90	> 90
3	1.02	0.10	90	> 90

Note: See Sketch No. 1 for indicator locations.

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Test Specimen #4: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE		
+116.0 / 116.0 psf	1	2	3
POSITIVE PRESSURE RANGE (psf)	0 – 58.0	0 – 69.6	0 – 150.8
AVERAGE CYCLE TIME (sec.)	2.84	2.99	N/A
NUMBER OF CYCLES	600	70	1
	4	5	6
NEGATIVE PRESSURE RANGE (psf)	0 – 58.0	0 – 69.6	0 – 150.8
AVERAGE CYCLE TIME (sec.)	2.63	2.74	N/A
NUMBER OF CYCLES	600	70	1

Test Specimen #4: Positive Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)	PERCENT RECOVERY	
			MEASURED %	ALLOWED %
1	0.59	0.06	90	> 90
2	0.66	0.06	91	> 90
3	0.62	0.06	90	> 90

Test Specimen #4: Negative Cyclic Load per TAS 203

INDICATOR LOCATION	MAXIMUM DEFLECTION (in.)	PERMANENT SET (in.)	PERCENT RECOVERY	
			MEASURED %	ALLOWED %
1	1.01	0.10	90	> 90
2	1.26	0.13	90	> 90
3	0.92	0.09	90	> 90

Note: See Sketch No. 1 for indicator locations.

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SECTION 9

CONCLUSIONS

No signs of failure were observed in any area of the test specimen during the TAS 202 testing; as such, the test specimen satisfies the requirements of TAS 202. Upon completion of testing, specimens tested for TAS 202-94 met the requirements of Section 1620 of the Florida Building Code, Building.

No signs of failure were observed in any area of the test specimens during the cyclic load test; as such, the test specimens satisfy the cyclic load requirements of TAS 203. Upon completion of testing, specimens tested for TAS 203-94 met the requirements of Section 1625 of the Florida Building Code, Building.

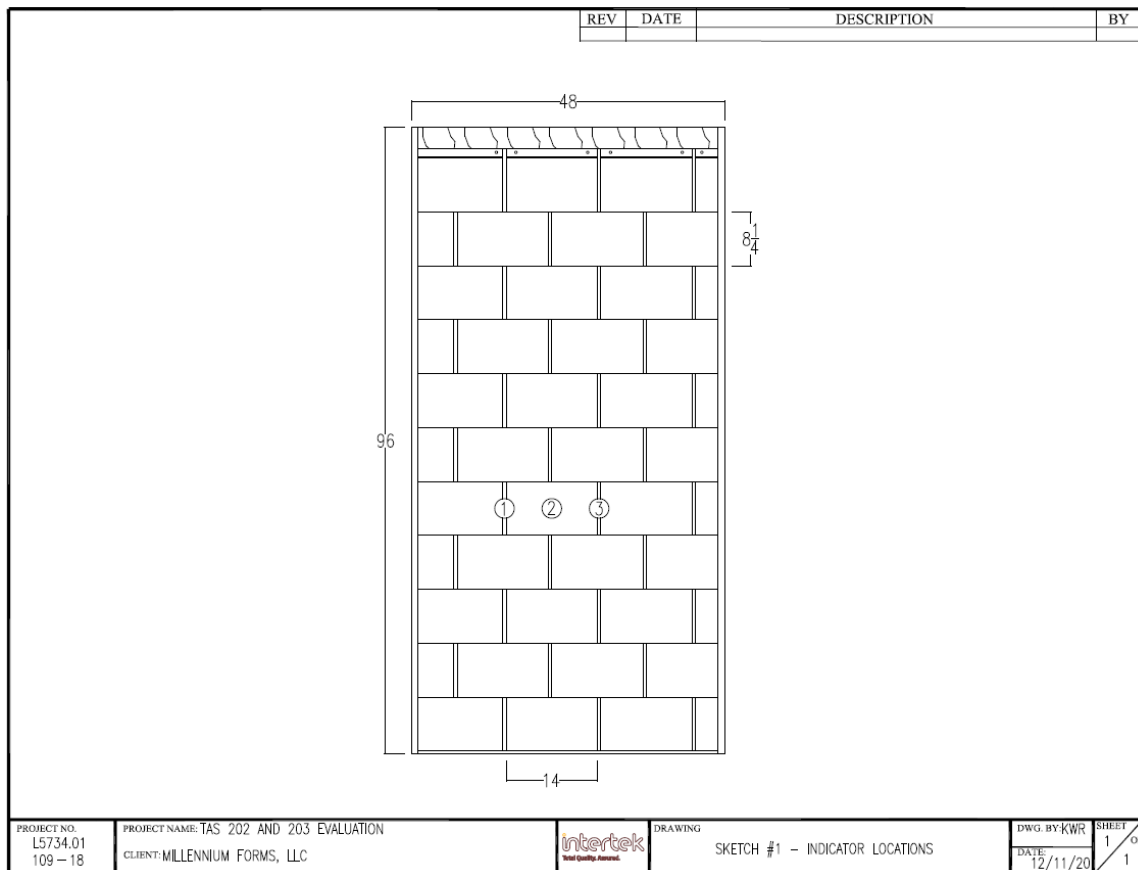
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SECTION 10

SKETCH



Sketch No. 1
TAS 202 and TAS 203 Indicator Locations

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SECTION 11

PHOTOGRAPH



Photo No. 1
Test Specimen Prior to Testing



Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

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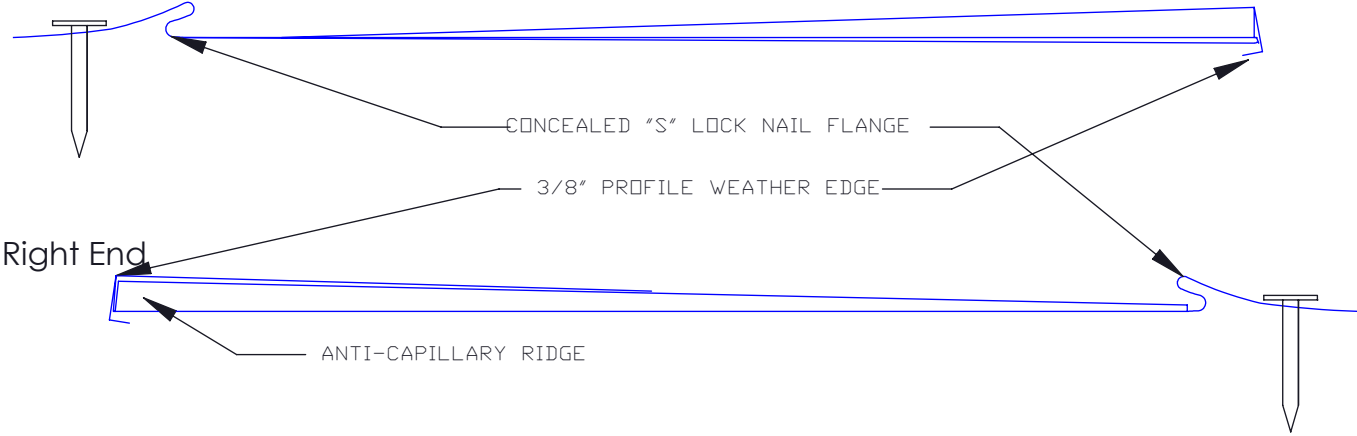
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SECTION 12

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

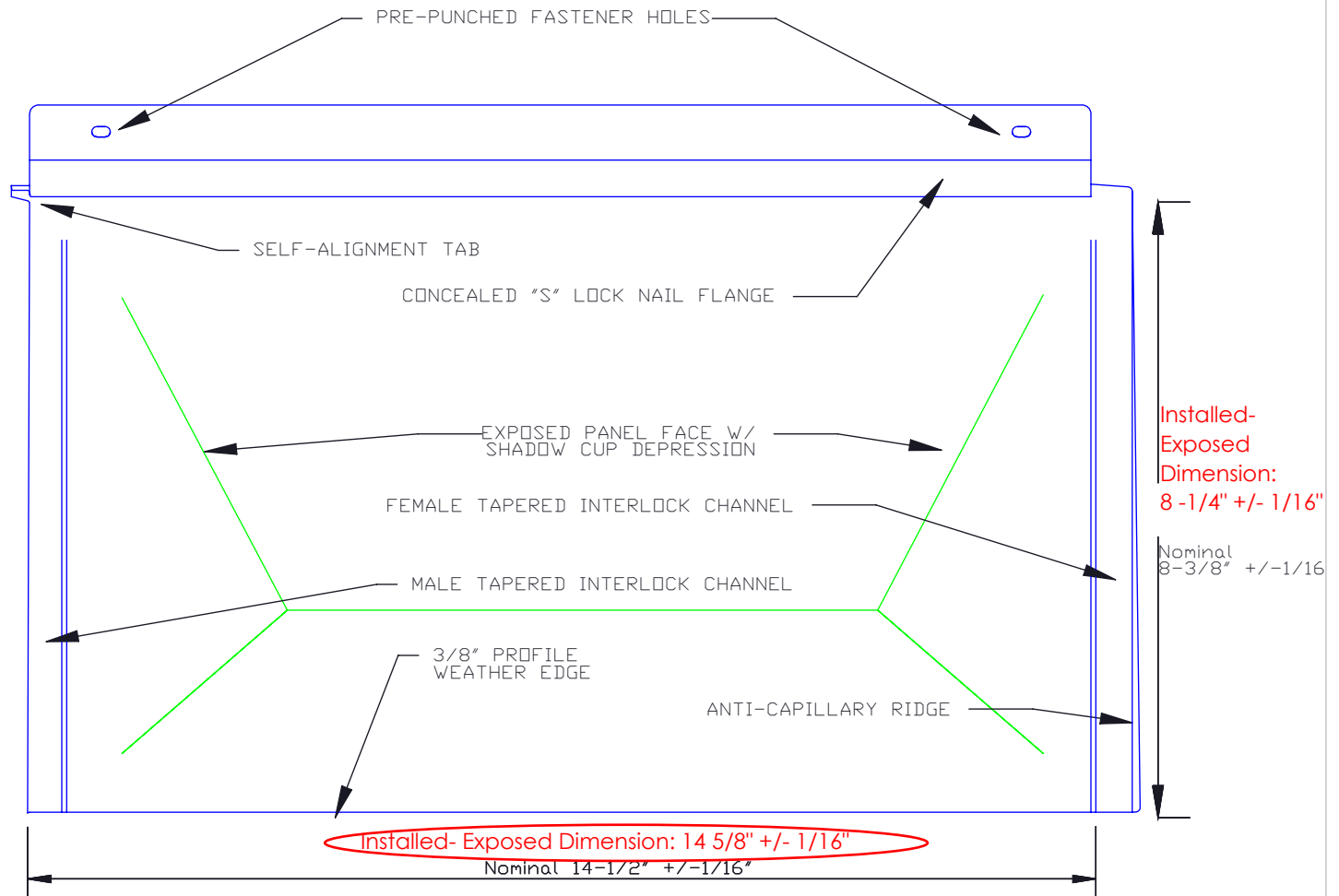


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Verified by: *Andrew P. Mahabadi*



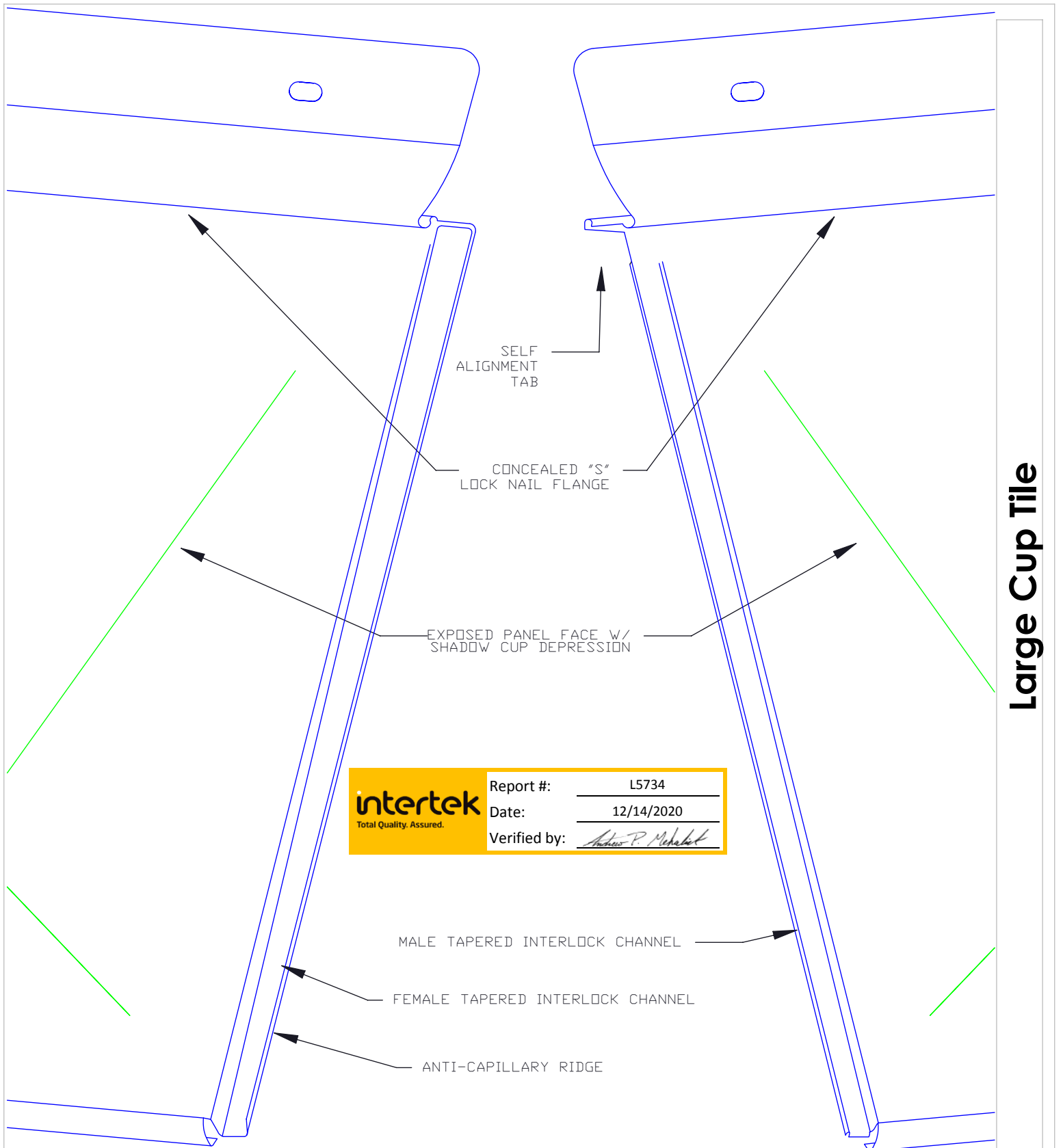
Large Cup Tile


Profile Details

1

 MILLENNIUM FORMS	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



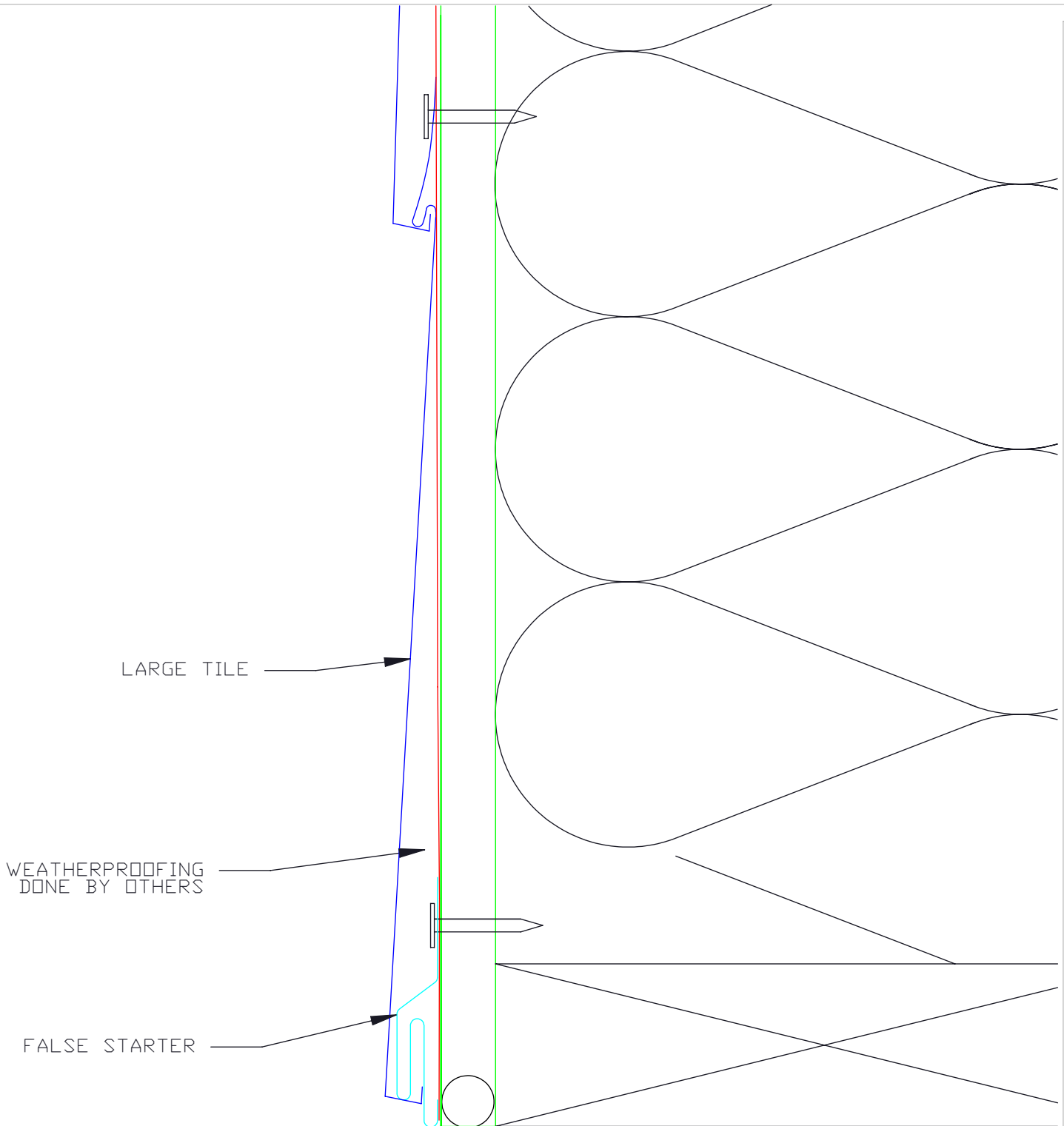
 Total Quality. Assured.	Report #:	L5734
	Date:	12/14/2020
	Verified by:	<i>Andrew P. Mehalick</i>

Vertical Joint Detail

2

 MILLENNIUM 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






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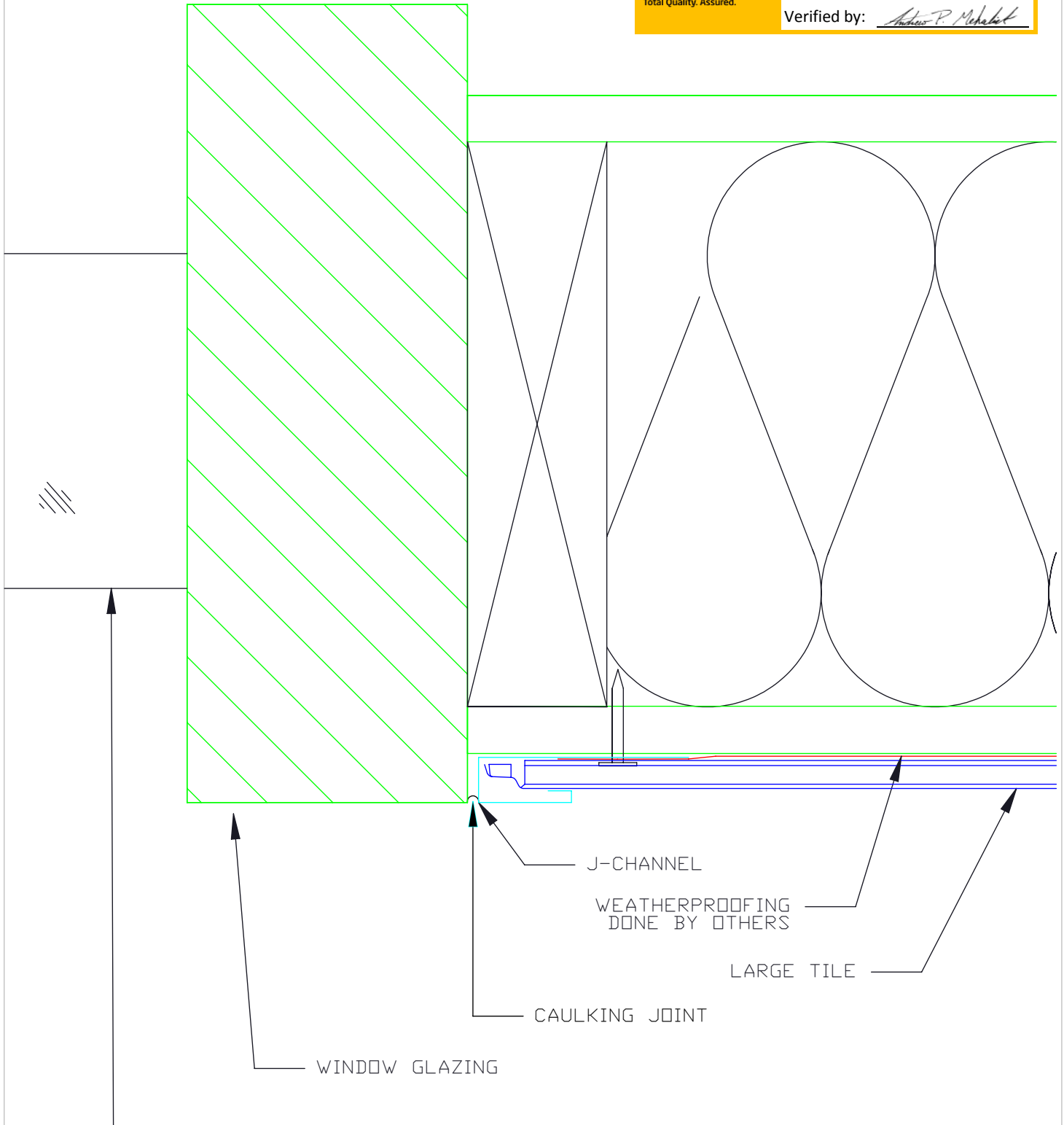
Verified by: *Andrew P. Mahabadi*

Starter/False Starter

4

 MILLENNIUM 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

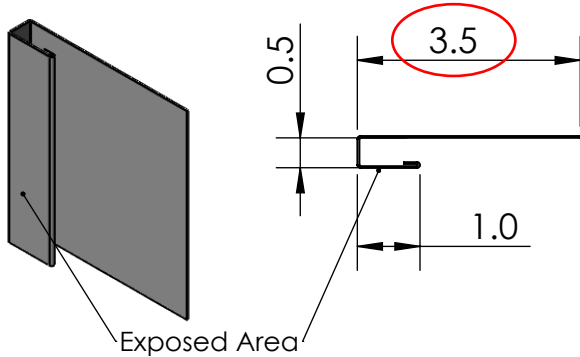
 MILLENNIUM F O R M S	Material	Sizes	Finish	Colors
	Stainless Steel	8 3/8" x 14 1/2" 0.018" +/- .002	Bright (BA) Mill (2B)	See color selection chart
	Zalmag	8 3/8" x 14 1/2" 0.018" +/- .002	Natural Pre-patina II Black	See color selection chart

Revised 12/10/20

J-Channel

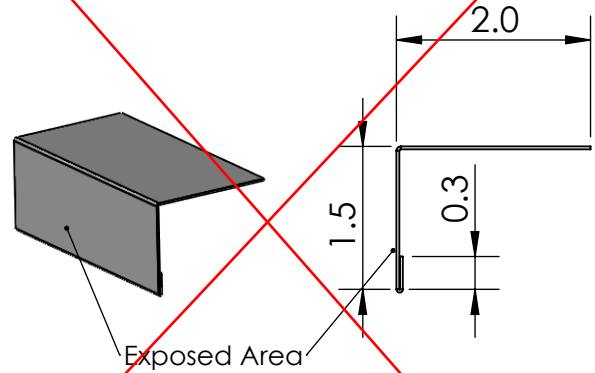


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Verified by: *Andrew P. Mahabadi*



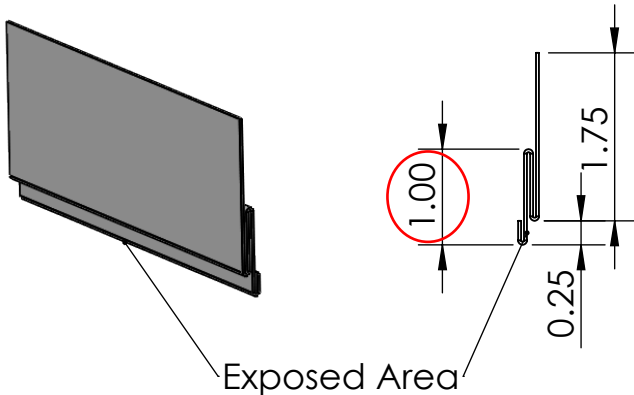
Initials: _____
Linear 10-ft Quantity: _____

~~Sill~~



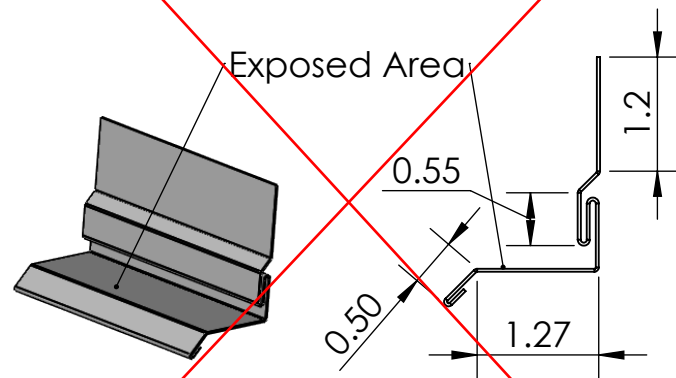
Initials: _____
Linear 10-ft Quantity: _____

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

 MILLENNIUM FORMS	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



Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
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SECTION 13

REVISION LOG

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