

CITADEL ARCHITECTURAL PRODUCTS FLORIDA BUILDING CODE TEST REPORT

SCOPE OF WORK

TAS 202, TAS 203 AND ASTM E8 TESTING ON ENVELOPE 2000 REVEAL (RV) SYSTEM

REPORT NUMBER

R6485.01-450-18 R0

TEST DATE(S)

10/21/24 – 10/22/24

ISSUE DATE

10/25/24

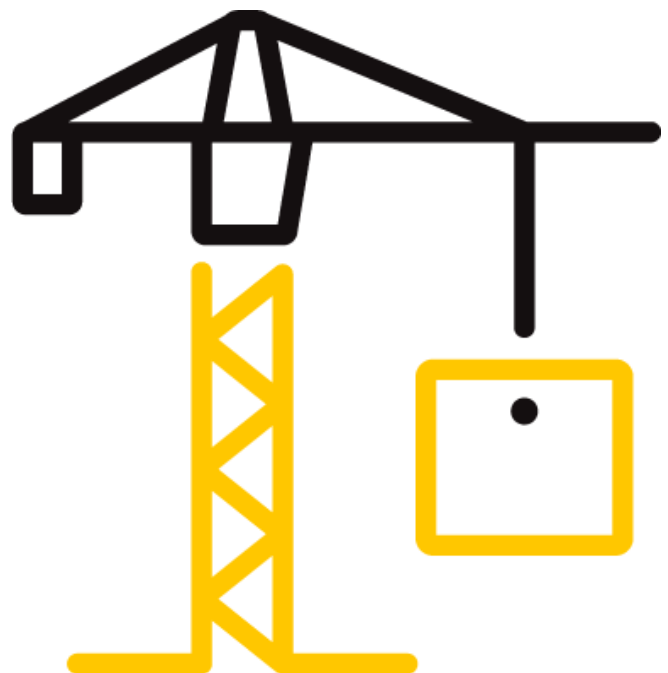
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12

DOCUMENT CONTROL NUMBER

RT-R-AMER-Test-2816 (06/21/24)

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TEST REPORT FOR CITADEL ARCHITECTURAL PRODUCTS

Report No.: R6485.01-450-18 R0

Date: 10/25/24

REPORT ISSUED TO

CITADEL ARCHITECTURAL PRODUCTS

6198 W Airport Blvd
Greenfield, IN 46140

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Citadel Architectural Products to perform TAS 202, TAS 203 and ASTM E8 testing in accordance with Florida Building Code for High Velocity Hurricane Zone requirements on their Envelope 2000 Reveal (RV) System. Results obtained are tested values and were secured by using the designated test method(s). TAS 202 and TAS 203 testing was conducted at the Intertek B&C test facility in West Palm Beach, FL. ASTM E8 testing was performed at the Intertek B&C test facility in Lithia Spring, GA. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

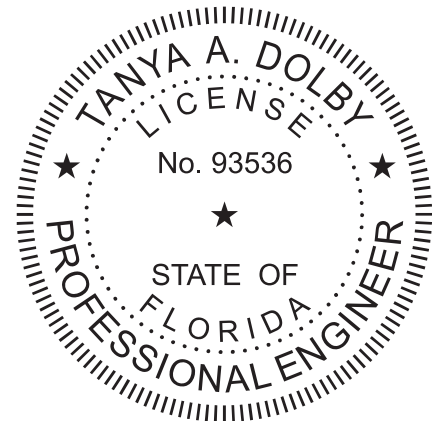
SECTION 2

SUMMARY OF TEST RESULTS

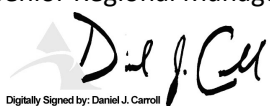
Product Type: Panel System

Series/Model: Envelope 2000 Reveal (RV)

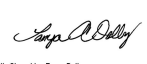
SPEC.	TEST PROTOCOL	DESIGN PRESSURE
1	TAS 202	+20.0 / -20.0 psf
	TAS 203 (Negative Only)	-20.0 psf
2	TAS 203 (Negative Only)	-20.0 psf
3	TAS 203 (Negative Only)	-20.0 psf



For INTERTEK B&C:

COMPLETED BY: Daniel Carroll
TITLE: Senior Regional Manager
SIGNATURE: 
Digitally Signed by: Daniel J. Carroll
DATE: 10/25/24

DC:TD

REVIEWED BY: Tanya Dolby, P.E.
TITLE: Engineering Manager – Engineering Services
SIGNATURE: 
Digitally Signed by: Tanya Dolby
DATE: 10/25/24
Date: 2024.10.25 18:33:38 -04'00'

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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*

ASTM E8/E8M-22, *Standard Test Methods for Tension Testing of Metallic Materials*

SECTION 4

MATERIAL SOURCE/INSTALLATION

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 four years from the test completion date.

The specimens were installed onto a 2x6 stud wall with studs at 16" on center and sheathed with 5/8" plywood secured with 8D ring shank nails spaced 6" on center. The exterior perimeter of the specimen(s) was sealed with sealant. Installation of the tested product was performed by the client.

SECTION 5

EQUIPMENT

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

Deflection Measuring Device: Linear transducers

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Seth Allen	Intertek B&C
Cesar Prieto	Intertek B&C

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SECTION 7

TEST SPECIMEN DESCRIPTION

Product Type: Panel System

Series/Model: Envelope 2000® Reveal (RV) System

Product Size(s):

OVERALL AREA:	WIDTH	HEIGHT
93.5 ft ²	inches	inches
Overall Size	182	74

Frame Construction:

FRAME MEMBER	MATERIAL	DESCRIPTION
CRAX-2 Perimeter J (Reveal)	6063 Alloy T-5 Temper Aluminum	Secured through the pre drilled holes spaced 12" on center with #10-13 x 1-1/2" screws.
CRAX-1 Horz/Vert (Reveal)	6063 Alloy T-5 Temper Aluminum	Secured through the pre drilled holes spaced 12" on center with #10-13 x 1-1/2" screws.
Envelope 2000 Panel Strips	See panel construction details below	Secured through the pre drilled holes spaced 12" on center with #10-13 x 1-1/2" screws.

	Joinery Type	Detail
All Corners	Mitered	Mechanically fastened

Panel Construction:

MODEL	OVERALL THICKNESS	MAKEUP	Details
Envelope 2000	1.084"	0.024" Aluminum 0.105" Thermoset Phenolic Resin 0.010" Aluminum	Secured to the CRAX-2 Perimeter J and CRAX-1 Horz/Vert with with Tremco Spectrem 2 silicone sealant and secured to the panel strips with Franklin Titebond Heavy Duty Construction Adhesive.

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SECTION 8

TEST RESULTS

Protocol TAS 202-94, Static Air Pressure

Test Date(s): 10/22/24

The temperature during testing was 80°F. The results are tabulated as follows:

Test Specimen #1: Air Leakage per TAS 202

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per TAS 202 at 1.57 psf (25 mph)	<0.01 cfm/ft ²	Report	
Air Leakage, Infiltration per TAS 202 at 6.27 psf (50 mph)	0.01 cfm/ft ²	0.06 cfm/ft ² max.	

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

LOAD (psf)	SPAN	NET DEFLECTION (in.)	NET PERMANENT SET (in.)
		MEASURED	MEASURED
+15.0 50% of Test Pressure	1-2-3	<0.01	<0.01
	6-3-7	<0.01	<0.01
	3-8-9	0.01	<0.01
	4-2-5	<0.01	<0.01
	10-8-11	0.02	<0.01
+20.0 Design Pressure	1-2-3	<0.01	<0.01
	6-3-7	0.02	<0.01
	3-8-9	0.01	<0.01
	4-2-5	<0.01	<0.01
	10-8-11	0.02	<0.01
-15.0 50% of Test Pressure	1-2-3	0.07	0.03
	6-3-7	<0.01	<0.01
	3-8-9	0.32	<0.01
	4-2-5	0.05	0.03
	10-8-11	0.31	<0.01
-20.0 Design Pressure	1-2-3	0.13	0.05
	6-3-7	0.04	<0.01
	3-8-9	0.37	0.02
	4-2-5	0.13	0.04
	10-8-11	0.38	<0.01

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Test Specimen #1: Water Penetration per TAS 202

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Water Penetration, per TAS 202 15% of Positive Design Pressure at 3.0 psf	Pass	No leakage	

Test Specimen #1: Structural Overload Load per TAS 202

LOAD (psf)	SPAN	NET DEFLECTION (in.)	NET PERMANENT SET (in.)
		MEASURED	MEASURED
+30.0 Test Pressure	1-2-3	0.04	0.01
	6-3-7	<0.01	<0.01
	3-8-9	0.04	0.01
	4-2-5	0.02	<0.01
	10-8-11	0.02	0.01
+30.0 Design Pressure	1-2-3	0.47	0.09
	6-3-7	0.07	0.01
	3-8-9	0.51	0.02
	4-2-5	0.43	.08
	10-8-11	0.52	<.01

Note 1: Positive and negative uniform static load test loads were held for 30 seconds.

Note 2: 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.

Note 3: See Sketch #1 for indicator locations. Deflection/permanent set reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

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Protocol TAS 203-94, *Cyclic Wind Pressure Loading*

Test Date(s): 10/21/24 through 10/22/24

The temperature during testing was 79°F - 83°F. The results are tabulated as follows:

Test Specimen #1: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE		
-20.0 psf	1	2	3
NEGATIVE PRESSURE RANGE (psf)	0 – 10.0	0 – 12.0	0 – 26.0
AVERAGE CYCLE TIME (sec.)	2.5	2.6	1.0
NUMBER OF CYCLES	600	70	1

Test Specimen #1: Negative Cyclic Load per TAS 203

SPAN	NET MAXIMUM DEFLECTION (in.)	NET PERMANENT SET (in.)
1-2-3	0.47	0.06
6-3-7	0.06	0.05
3-8-9	0.44	<0.01
4-2-5	0.48	0.09
10-8-11	0.48	0.02

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

DESIGN PRESSURE	STAGE		
-20.0 psf	1	2	3
NEGATIVE PRESSURE RANGE (psf)	0 – 10.0	0 – 12.0	0 – 26.0
AVERAGE CYCLE TIME (sec.)	2.6	2.6	1.0
NUMBER OF CYCLES	600	70	1

Test Specimen #2: Negative Cyclic Load per TAS 203

SPAN	NET MAXIMUM DEFLECTION (in.)	NET PERMANENT SET (in.)
1-2-3	0.12	0.14
6-3-7	0.03	0.02
3-8-9	0.18	0.04
4-2-5	0.07	0.06
10-8-11	0.20	0.04

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

DESIGN PRESSURE	STAGE		
-20.0 psf	1	2	3
NEGATIVE PRESSURE RANGE (psf)	0 – 10.0	0 – 12.0	0 – 26.0
AVERAGE CYCLE TIME (sec.)	2.3	2.4	1.0
NUMBER OF CYCLES	600	70	1

Test Specimen #3: Negative Cyclic Load per TAS 203

SPAN	NET MAXIMUM DEFLECTION (in.)	NET PERMANENT SET (in.)
1-2-3	0.04	0.04
6-3-7	<0.01	<0.01
3-8-9	0.17	0.07
4-2-5	0.08	0.04
10-8-11	0.16	0.06

Note 4: See Sketch #1 for indicator locations. Deflection/permanent set reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

ASTM E8/E8M-22, Tension Testing of Metallic Materials

The test specimens were evaluated in accordance with the most recent revision of ASTM E8, *Standard Test Methods for Tensile Testing of Metallic Materials*. The tensile coupons were machined from the metal members to the dimensions of the sheet-type 0.5" wide specimen given in Figure 1 of ASTM E8. Elongation was measured at fracture.

Test Method:	ASTM E8-22			
Orientation:	Longitudinal			
Specimen No.	Yield Strength @ 0.2% Offset (psi)	Thickness (in)	Tensile Strength (psi)	Elongation in 2" (%)
1	18,561.49	0.147	18,561.49	6.50
2	17,461.89	0.147	17,461.89	6.00
3	17,436.09	0.147	17,436.09	4.50
Average	17819.82	0.147	17,819.82	5.67

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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.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule, also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

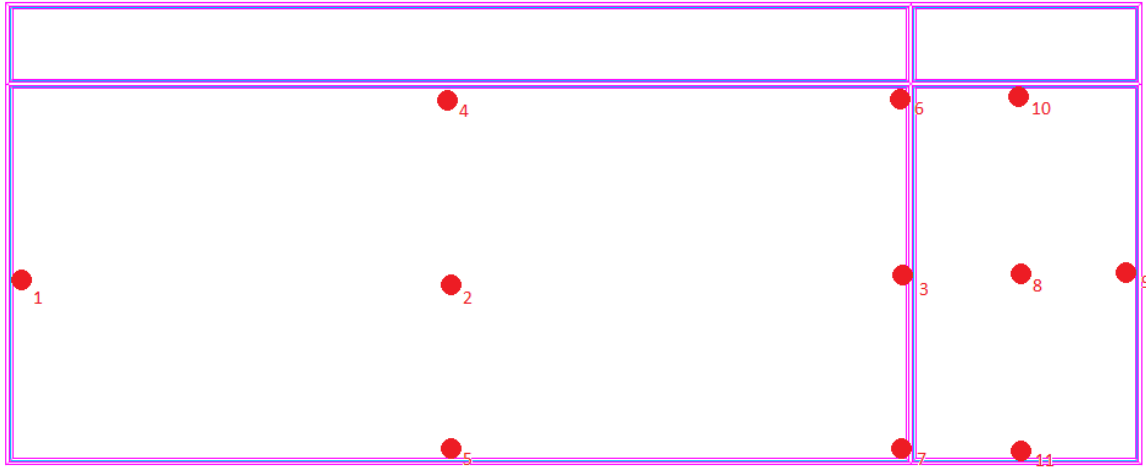
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SECTION 10

SKETCH(ES)



Sketch No. 1
Indicator Locations



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West Palm Beach, Florida 33407

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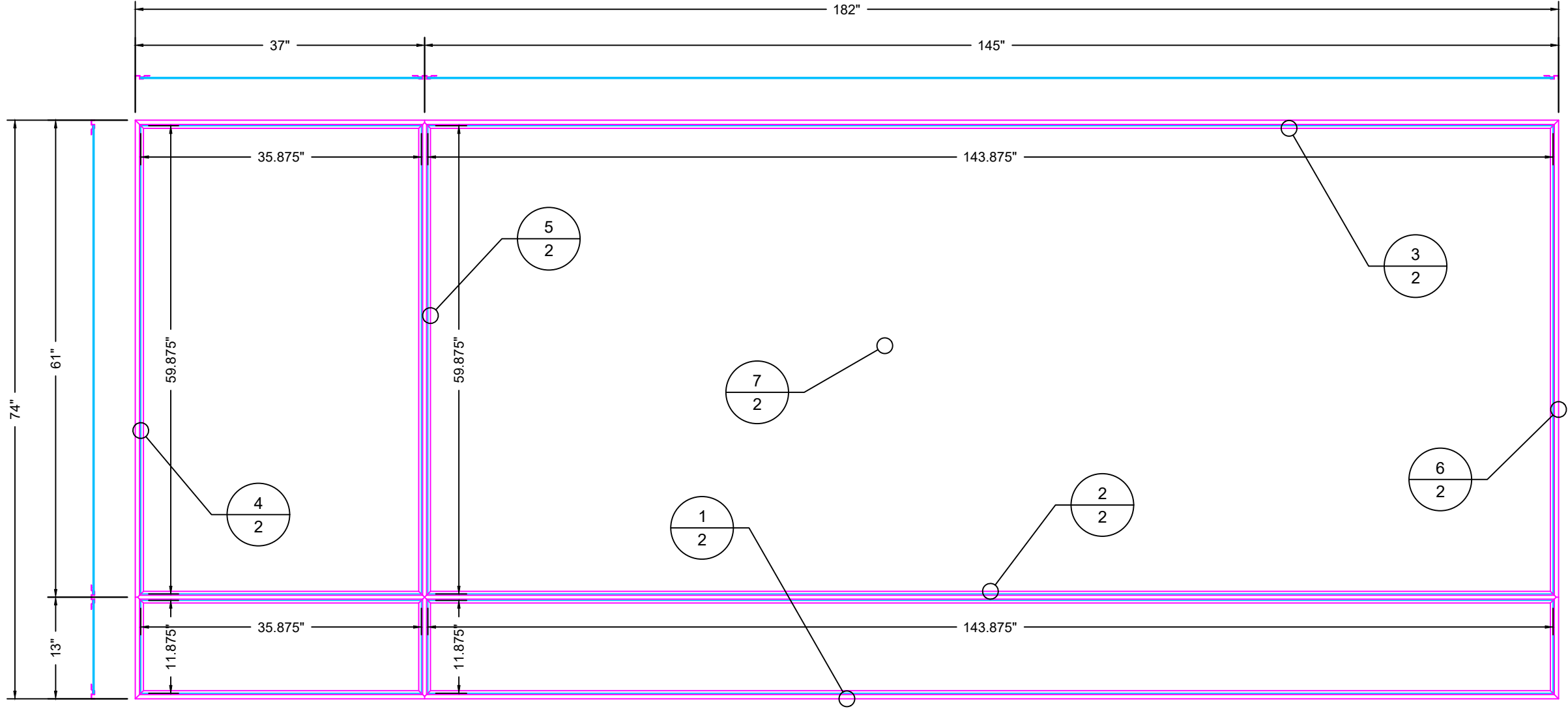
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SECTION 11

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.



A ELEVATION
3/4" : 1' - 0"



Report #:

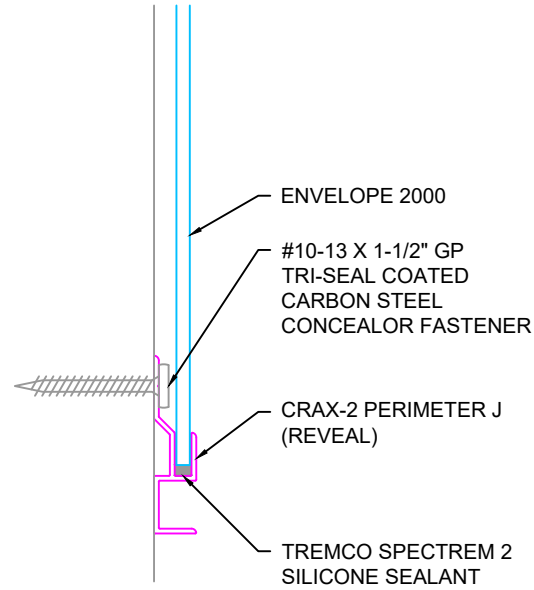
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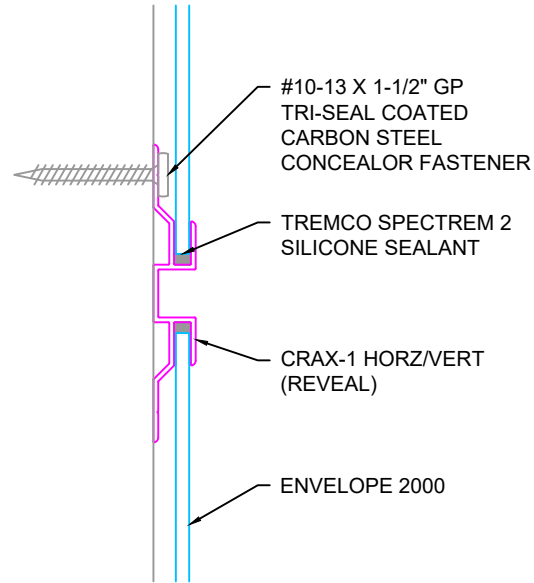

Digitally Signed by: Melissa M. Butler



1

BOTTOM TERMINATION

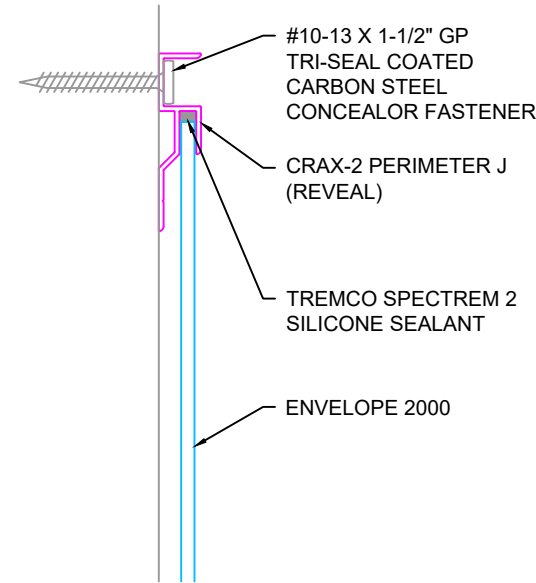
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2

HORIZONTAL

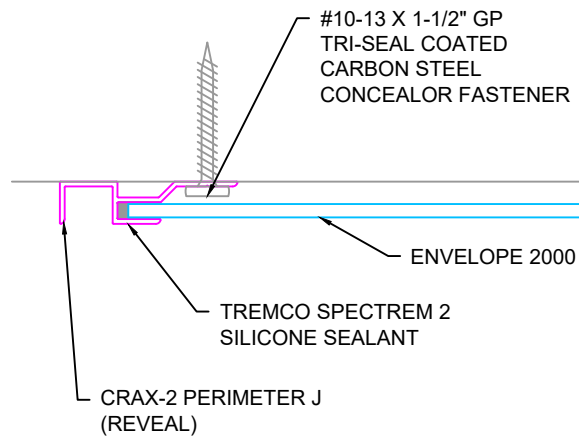
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3

TOP TERMINATION

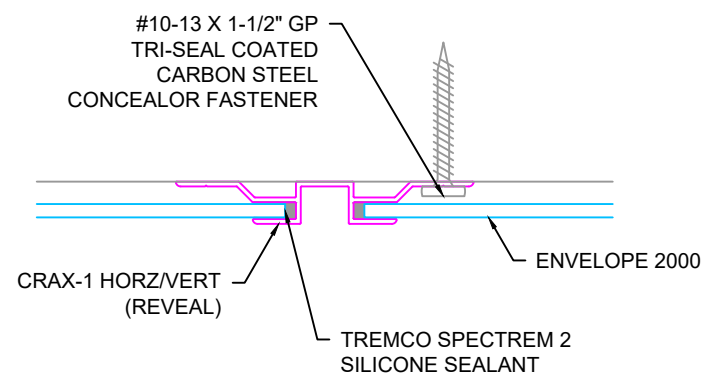
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4

LEFT TERMINATION

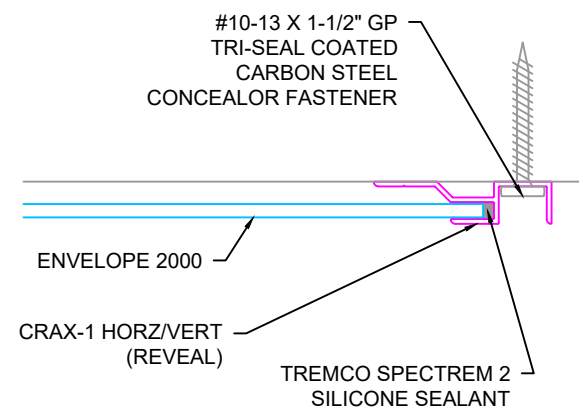
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5

VERTICAL

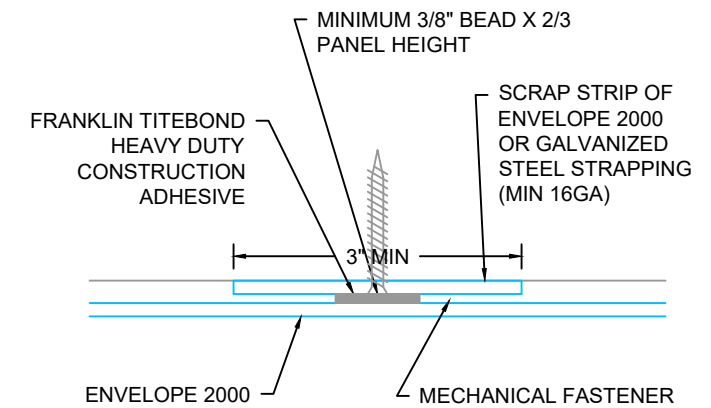
6" : 1' - 0"



6

RIGHT TERMINATION

6" : 1' - 0"



7

INTERMEDIATE

6" : 1' - 0"



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Citadel Architectural Products, LLC
6198 West Airport Boulevard
Greenfield, IN 46140
(317) 894-9400 • (800) 446-8828
www.citadelap.com • info@citadelap.com

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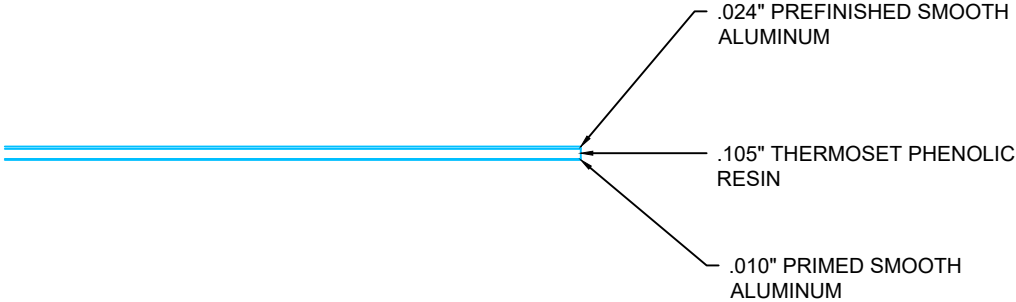
2 OF 4

REVEAL (RV) SYSTEM - FPA

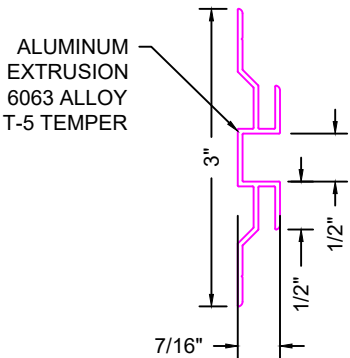
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SECTION DETAILS

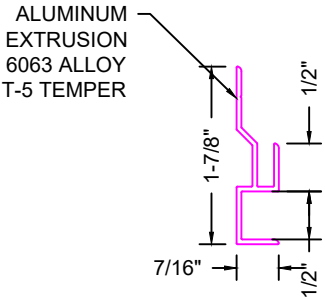
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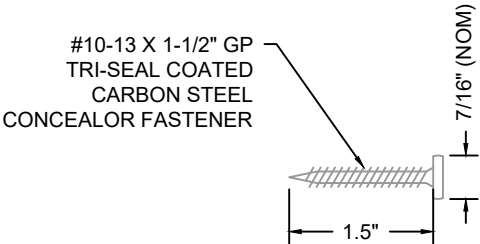
8 ENVELOPE 2000
6" : 1' - 0"



9 CRAX-1 HORZ/VERT (REVEAL)
6" : 1' - 0"



10 PERIMETER J (REVEAL)
6" : 1' - 0"



11 CONCEALOR FASTENER
6" : 1' - 0"



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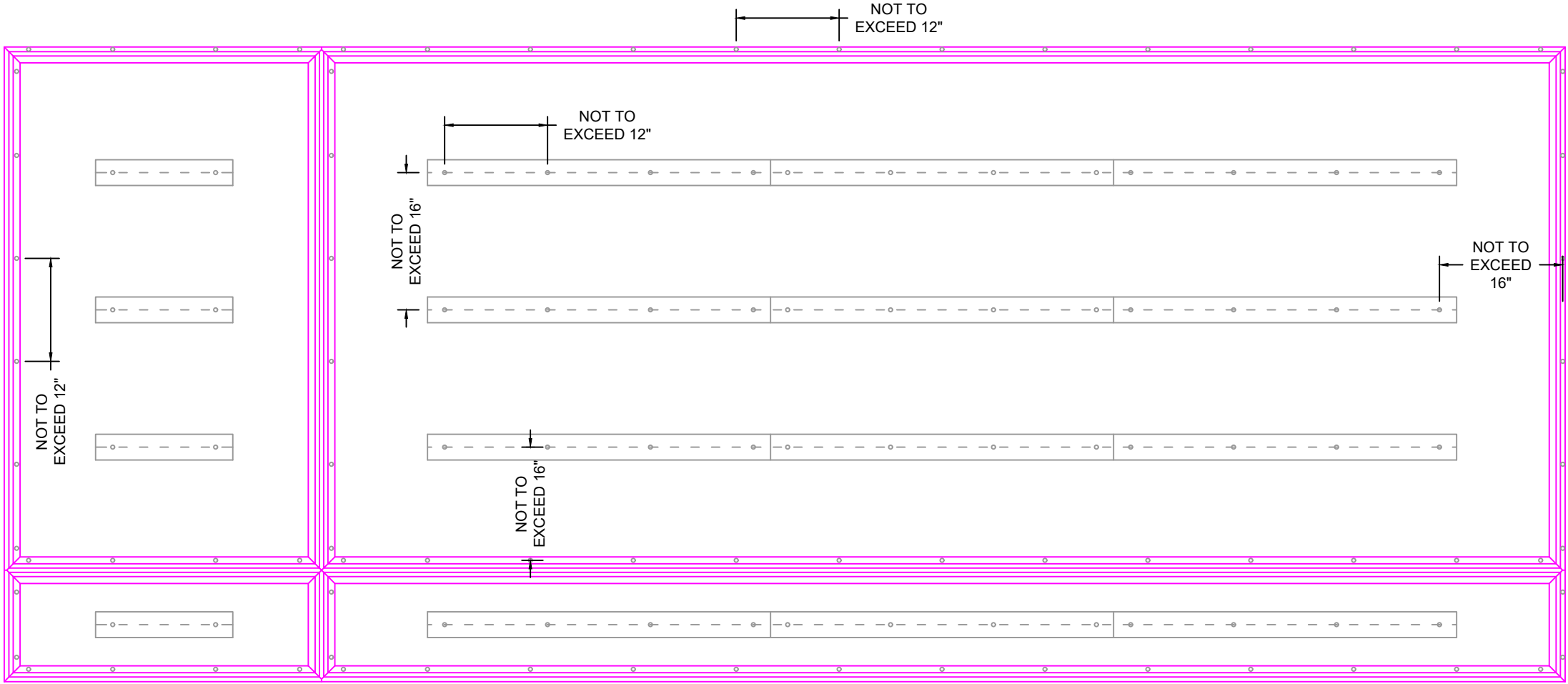
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B FASTENING SCHEDULE
3/4" : 1' - 0"



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SECTION 12

REVISION LOG

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