Evaluation Report

"Envelope 2000®"
RainScreen Wall System (RS)

Manufacturer

Citadel Architectural Products
3131A North Franklin Road
Indianapolis, IN 46226
(800)446-8828

For

Florida Product Approval

FL 14436.2 R5

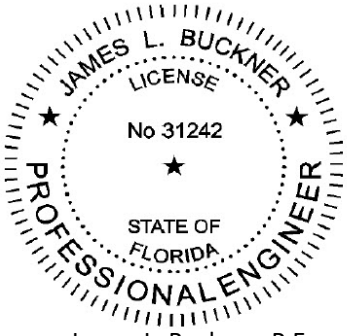
Florida Building Code 8th Edition (2023)
Per Rule 61G20-3

Method:	**2 - B**
Category:	**Structural Components**
Sub - Category:	**Structural Wall**

Product Assembly Name:	*Envelope 2000® RainScreen Wall System (RS)*
Assembly Type:	*Metal Composite Material (MCM) Wall Panel System*
Support Type:	*Steel Studs*

This item has been digitally signed and sealed by James L. Buckner, P.E., on this date below. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

Prepared by:
James L. Buckner, P.E., SECB
Florida Professional Engineer # 31242
Florida Evaluation ANE ID: 1916
Report No. 23-610.02_RS-ER
(Revises Report No. 20-303.02_RS-ER, FL14436.2 R4)
Date: 12/26/2023



James L. Buckner, P.E.
FL31242

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1.0 Product:

1.1 **Manufacturer** Citadel Architectural Products
1.2 **Product Name** Envelope 2000®
RainScreen Wall System (RS)

2.0 Evaluation Scope:

2.1 **Compliance with the following**
Florida Building Code (FBC) 8th Edition (2023)

2.2 **Evaluation Method:**
Florida Product Approval Rule 61G20-3.005 (2) (b)

2.3 **Evaluation Classification:**
Category: Structural Components
Sub Category: Structural Wall

2.4 **Properties Evaluated**
Structural (Wind Resistance) Properties

2.5 **Limits of Evaluation:**
This product assembly evaluation is limited to compliance with section 2.1 to section 2.4 of this report.

3.0 Evaluated Uses:

The Envelope 2000® Metal Composite Material (MCM) wall system is used as an exterior wall cladding system.

4.0 Product Assembly Description:

General:

The Envelope 2000® RainScreen Wall System (RS) is an exterior metal composite material (MCM) wall system with a Kynar 500® Finish. Envelope 2000® panel consists of a prefinished aluminum faces with a core of thermoset phenolic resin. The wall system is attached to the support with a series of aluminum extrusions.

5.0 General Assembly as Evaluated:

Envelope 2000® Panel
Aluminum Extruded Sub-framing
Sheathing
Steel Stud Support

6.0 Support Description:

Type: Wall Studs
Material: Steel
Thickness: 16 Ga. Minimum
Spacing: 16” o.c. Maximum

(Design of support system is outside the scope of this evaluation)

7.0 Sheathing Description:

Type: In accordance with applicable code sections.
Thickness: 5/8” Maximum

8.0 Water Resistive Barrier Description:

Type: In accordance with applicable code sections

9.0 Structural Performance:

9.1 Wind Resistance:

Positive	+ 58 PSF
Negative	- 58 PSF

Notes:

- *Positive Pressure Inward, Negative Pressure Outward*
- *Allowable design pressure(s) for allowable stress design (ASD) with a margin of safety of 1.5 : 1.*
- *Based on 3 or more spans*

10.0 Performance:

10.1 The The following test protocol was performed to demonstrate compliance with the intent of the code.

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

11.0 Code Compliance:

11.1 The product assembly described herein has demonstrated compliance with:

11.1.1 Florida Building Code (FBC) 8th Edition (2023), Section 1708.2

12.0 Limitations and Conditions of Use:

12.1 Diaphragm and axial load capacity is outside the scope of this evaluation.

12.2 Scope of "Limitations and Conditions of Use" for this evaluation:

This evaluation report for "State Approval" contains technical documentation, specifications and installation method(s) which include "Limitations and Conditions of Use" throughout the report in accordance with Rule 61G20-3.005. Per Rule 61G20-3.004, the Florida Building Commission is the authority to approve products under "State Approval".

12.3 Option for application outside "Limitations and Conditions of Use"

Rule 61G20-3.005(1)(e) allows engineering analysis for "project specific approval by the local authorities having jurisdiction in accordance with the alternate methods and materials authorized in the Code". Any modification of the product as evaluated in this report and approved by the Florida Building Commission is outside the scope of this evaluation and will be the responsibility of others.

12.4 Design of support system is outside the scope of this report. Support shall be designed by others and shall comply with the FBC Chapters 22 for steel and Chapter 16 for structural loading.

12.5 Fire Classification is outside the scope of Rule 61G20-3, and is therefore not included in this evaluation.

12.6 This report does not evaluate the use of this product for use in the High Velocity Hurricane Zone code section. (Dade & Broward Counties)

13.0 Quality Assurance:

The manufacturer has demonstrated compliance of products in accordance with the Florida Building Code and Rule 61G20-3.005 (3) for manufacturing under a quality assurance program audited by an approved quality assurance entity through **Intertek Testing Services NA Inc. - ETL/ Warnock Hersey** (FBC Organization #: QUA 1673)

14.0 Components

14.1 Panel:

- Type: Metal Composite Material (MCM) Wall Panel
- Panel Overall Dimensions
  - Nominal Thicknesses: 1/8" (4 mm)
  - Width: 60" Maximum
  - Length: 144" Maximum
- Panel Face (Exterior Face)
  - Material: Aluminum
  - Nominal Thickness: 0.024" (0.609 mm)
  - Alloy: 3105-H25
- Panel Core
  - Material: Thermoset Phenolic Resin Core
  - Nominal Thickness: 0.105" (2.67 mm)
  - Typical Average Density: 0.033 lb/in^3
- Panel Backer (Interior Face)
  - Material: Aluminum
  - Nominal Thickness: 0.010" (0.609 mm)
  - Alloy: 3105-H25

Extrusion Part 1: *(Factory installed)*
- Part #: 8212
- Material: Aluminum (Extruded)
- Alloy: 6063-T5

Extrusion Part 2: *(Factory installed)*
- Part #: 8216
- Material: Aluminum (Extruded)
- Alloy: 6063-T5

Extrusion Part 3: *(Factory installed)*
- Part #: 8212
- Material: Aluminum (Extruded)
- Alloy: 6063-T5

Panel Clip: *(Factory installed)*
- Part #: RR-103
- Material: Aluminum (Extruded)
- Alloy: 6063-T5

Fastener #1: *(Factory Installed, Panel Extrusions To Panel)*
- Type: Pop Rivet
- Material: Aluminum
- Size: 3/16"

14.2 Fastener #2: *(Panel Clips to Support)*
- Type: Hex Washer Head Self-Drilling Screws
- Material: Steel
- Size: # 10 - 16 × 1-1/4" Minimum
- Corrosion Resistant: Per SAE J78-1979
- Spacing: 16" o.c. Maximum

15.0 Installation Method:

"Envelope 2000® RainScreen Wall System (RS)" shall be installed in compliance with the installation method listed in this report and applicable code sections of FBC 8th Edition (2023). The installation method described herein is in accordance with the scope of this evaluation report. Refer to manufacturer's installation instructions as a supplemental guide for attachment.

(Refer to installation method on Pages 6 through 8 of this evaluation report.)

16.0 Evaluation Reference Data:

16.1 ASTM E330- Structural Performance Test
By Intertek Testing Services NA, Inc-Middleton Lab (FBC Organization ID# TST 6781)
Report #: G100153407MID-02, Dated: 09 / 23 / 10

16.2 Quality Assurance
Intertek Testing Services NA Inc. - ETL/ Warnock Hersey (FBC Organization #: QUA 1673)

16.3 Certification of Independence
By James L. Buckner, P.E. @ CBUCK Engineering
(FBC Organization # ANE 1916)

17.0 Additional Standards Tests:

Performed with Envelope 2000® RainScreen Wall System (RS), but not evaluated in this report.

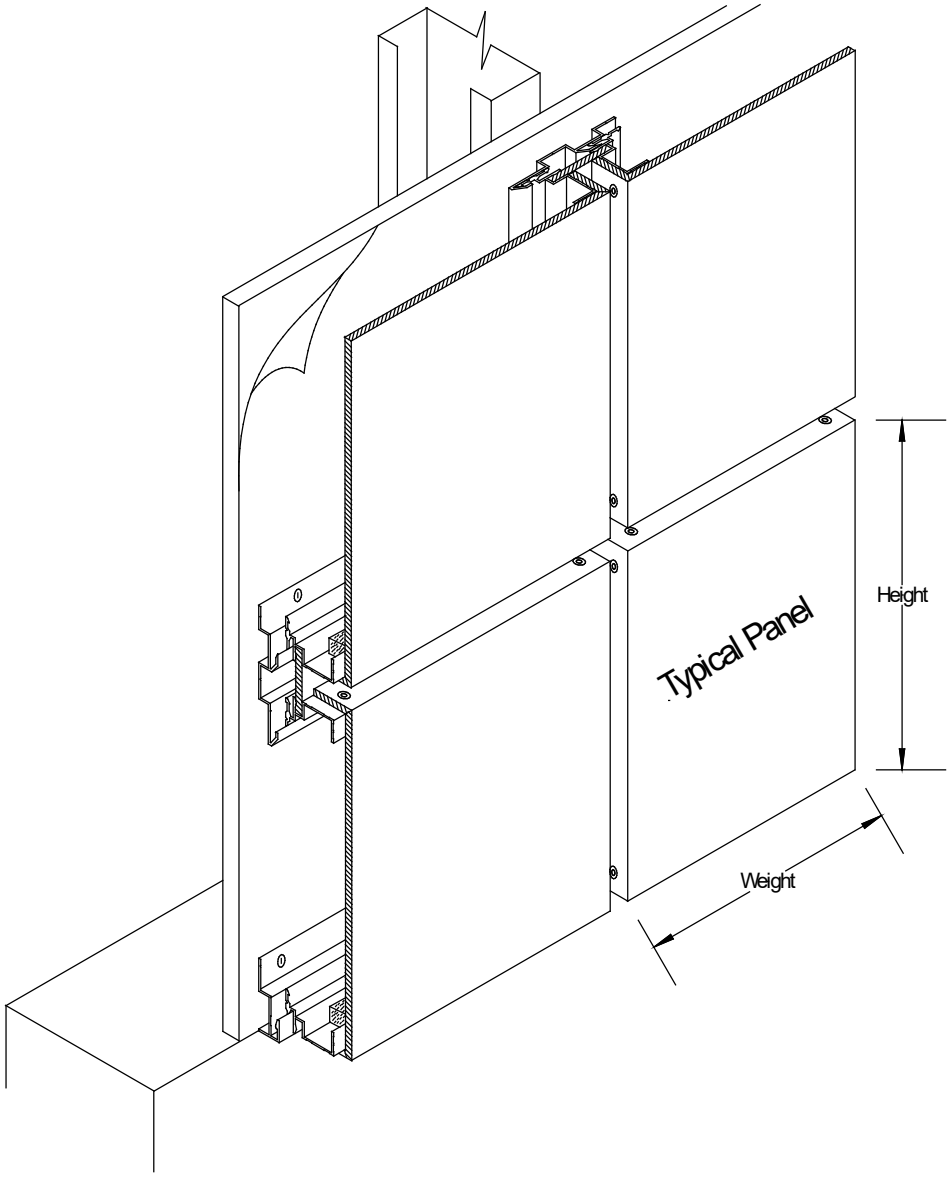
17.1 ASTM E331-00 Water Penetration Test
By Intertek Testing Services NA, Inc-Middleton Lab (FBC Organization ID# TST 6781)
Report #: G100153407MID-02, Dated: 09 / 23 / 10

17.2 ASTM E283-04 Air Leakage Test
Intertek Testing Services NA, Inc-Middleton Lab (FBC Organization ID# TST 6781)
Report #: G100153407MID-02, Dated: 09 / 23 / 10

Installation Method

Citadel Architectural Products

Envelope 2000® RainScreen Wall System (RS) Attached to Wall Studs



Typical Wall System Assembly

Nominal Panel Width: Up to 12 ft
Nominal Panel Height: Up to 5 ft

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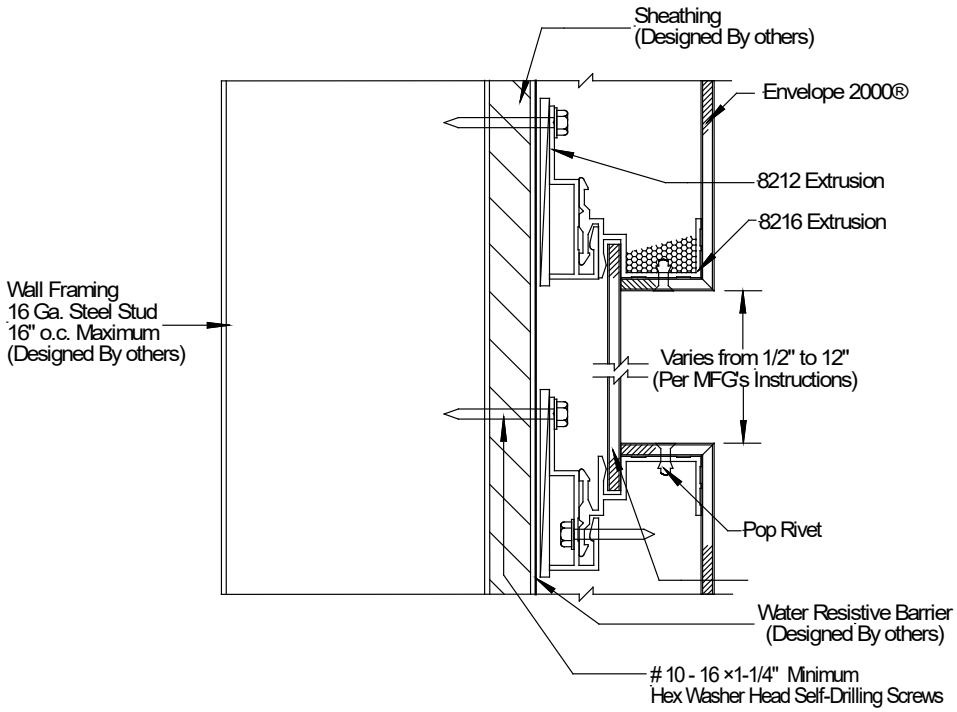
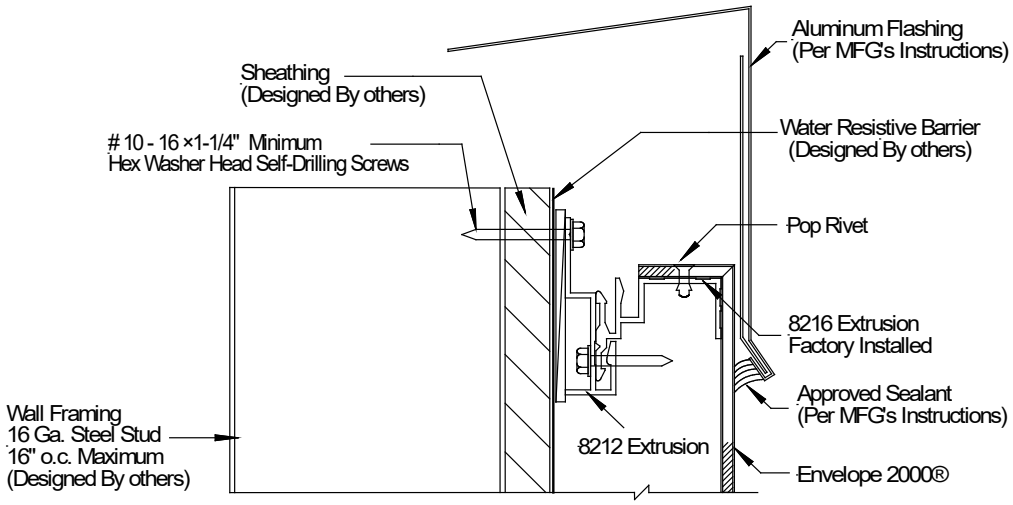
Citadel Architectural Products

Envelope 2000® RainScreen Wall System (RS) Attached to Wall Studs



Typical Vertical & Horizontal Joints
Side Section View

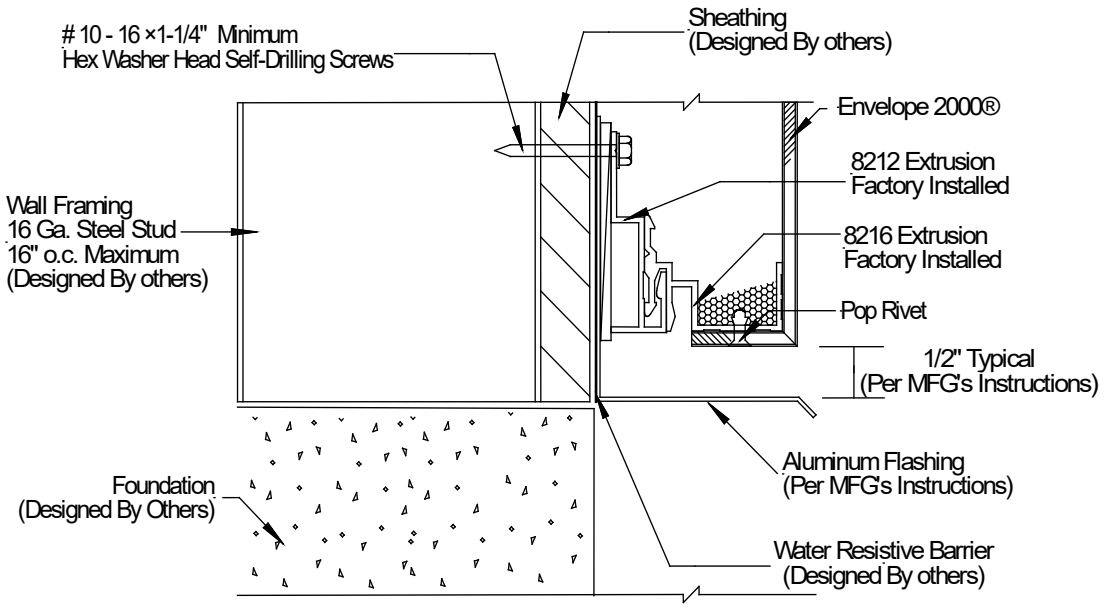


Typical Wall System Top Assembly
Side Section View

Installation Method

Citadel Architectural Products

Envelope 2000® RainScreen Wall System (RS) Attached to Wall Studs



Typical Wall System Base Assembly
Side Section View