

## SECTION 07 42 43 2023

**CARTER ARCHITECTURAL PANELS INC.**

**FUSION™ DRILLFREE™**

ALUMINUM COMPOSITE METAL (ACM) WALLPANEL

SPECIFICATION WITH ETALBOND ACM.

*SPEC NOTE: Optional text is indicated by square brackets [ ]. Delete unwanted items and square brackets in final specification.*

## PART 1 - GENERAL

* 1. SECTION INCLUDES
		1. Aluminum Composite Material (ACM) [pressure equalized rain-screen] [wet-seal] [dry- seal] panels.
		2. [Supply only] [Supply and install].

. *SPEC NOTE: Re 1.1.3. Items listed are available at extra cost and not included with basic panel package.*

* + 1. Accessories including Z-girts, roof caps, drip flashing, jamb flashing through wall flashing, and all other architectural trims.
		2. Standards for Consideration and Supporting Evidence

 . 1 Carter Architectural Panels, Inc., is recognized as the leading ACM/MCM Attachment System Designer and Distributor. Through rigorous testing to meet performance criteria Carter obtained our **Code Compliance Research Report (CCRR)**, which will be referred to as **CCRR-0474** hereafter.

.2 The **CCRR-0474** addresses compliance with the following codes:

* 2021, 2018 International Building Code (**IBC**)
* 2020 Florida Building Code (**FBC**) including High Velocity Hurricane Zones (**HVHZ**); (**TAS 202, TAS 201** and **TAS 203**)
* Carter Panel Systems comply with IBC Section 1406 and ICC-ES AC25 (Acceptance Criteria for Metal Composite Material (MCM/ACM)
* Carter Panel Systems may be used on buildings of **Type I, II, III,** or **IV** construction for installations greater than 40 feet above grade

.3 Relevance of **CCRR-0474**:

* CCRR-0474 Acceptance means the tested panel was one complete fabricated unit and evaluated on the basis-of-design for a real-world utilization.
* Included in the construction/fabrication of the tested assembly is both the chosen outer ACM plank material and [insulation and AVB material if designed and required], as well as and inclusive of, the extruded attachment system and components required to secure the finished wall panel to the sub-structure, inclusive of but not limited to Z-girts/Hat-channels, filler strips/splines. Etc.
* **CCRR-0474 is unique in that it is inclusive of the entire panel and attachment assembly, where others are not.**
	1. RELATED REQUIREMENTS BY OTHERS [.1 Section 06 10 00 – Rough Carpentry]

[.2 Section 07 21 00 – Thermal Insulation]

[.3 Section 07 27 00 – Air Barrier]

[.4 Section 07 92 00 – Joint Sealants]

* 1. REFERENCE STANDARDS
1. ACM Panels
	1. AAMA 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
	2. ASTM B 209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

* 1. Code Compliance Research Report (CCRR); **CCRR-0473** recognizes etalbond® ACM/MCM 4mm FR Core

 .2 Panel Attachment System

 .1 (*see 1.6 Design & Performance Requirements; see 1.8 Technical Data* *utilizing proprietary FUSION™ DRILLFREE™ perimeter extrusions)*

* 1. PRE-INSTALLATION MEETINGS

.1 Coordinate products, techniques and sequencing of related work with Section [01 31 19 - Project Meeting] [and] [01 31 19.33-Pre-Installation Meetings].

* 1. SUBMITTALS
1. Under provisions of [Section 01 33 00], provide the following:
	1. Product Data: manufacturer’s printed sheets or pages illustrating the products to be incorporated into the project.
	2. Shop Drawings: Detail drawings showing openings, components, panel profile, dimensions, and other details of each condition and attachment such as treatment at edges, terminations, and flashings.
	3. Product Samples: 150 mm x 150 mm (6” x 6”) showing specified finish for each location.
	4. Product Test Reports: Indicate compliance of product requirements from qualified independent testing agency. (**AAMA; ASTM; NFPA; CCRR**)
	5. Manufacturer’s Instructions: Indicate installation requirements, rough-in dimensions, and special procedures.

 .6 Sample Warranty: As specified by this Section.

 .7 Maintenance Data: Panel replacement instructions and cleaning information.

 .8 LEED Credits: Conform to [Section 01 81 13 “Sustainable Design Requirements”] for documentation of LEED Credits re: Certification of Project under LEED [caGBC] [USGBC] 2012 Rating System.

1.6 DESIGN & PERFORMANCE REQUIREMENTS

.1 **Design**, fabricate and install an Aluminum Composite Material (ACM) pressure equalized rain-screen (PER) panel system in [fire-rated (FR)] core, to the following standards & requirements:

 .1 The ACM panel system MUST be the FUSION™ DRILLFREE™ design. All mounting hardware must also be fully concealed with color matched splines utilizing the same Kynar/PvDF paint technology as the coil coated ACM, provided by manufacturer.

.2 Only a Progressive System (independent panel, one-from-another), using sliding male-female clip components, which are held to the panels perimeter extrusion using screws. This design must enable a single panel to be independently removed and re-installed.

.3 Any ACM panel attachment system not meeting the standards & requirements outlined above (1.6.1.1; 1.6.1.2), or any panel system utilizing a track or grid layout, or one that involves a “picture frame style” post-painted extrusion incorporating a face panel, or one that utilizes adhesives in place of mechanical fasteners in the panel design, are **NOT** considered as equal or comparable in design or performance, to the FUSION™ DRILL FREE™ architectural panel system.

.4 Review and evaluate the product test reports made available by manufacturer,

 to ensure performance expectations can be accomplished. See [www.carterpanels.com](http://www.carterpanels.com)

.2 **Structural Performance**: FUSION™ DRILLFREE™ ACM panel system is capable of withstanding the effects of the following loads, based on testing in accordance to **ASTM E 330-14**:

 *Note: The default deflection of the support framing was restricted to L/180 referencing AAMA 508 Section 5.1.2*

.1 Wind Load: *Maximum Pressure achieved* = **5,387 Pa¹ (112.5 lbs/ft²)**;

(*equivalent to* **210 mph** / **337 km/h** *based on Ensewiler formula*)

.2 Specified Design Load:3,591 Pa (75.0 lbs/ft²)

.3 Positive Loading Net Deflection: (+3,591 Pa; 75.0 lbs/ft²) = 0.307 inches (7.8mm)

.4 Negative Loading Net Deflection: (-3,591 Pa; -75.0 lbs/ft²) = 0.334 inches (8.5mm)

(**¹** Cladding system did not disengage from the wall assembly. The FUSION™ DRILL FREE™ panel system did not fail at **5,387** Pa., whereas the vertical supporting steel studs buckled in the center)

.3 **Air Infiltration**: Air leakage of not more than 0.01 cfm/ lbs/ft² (0.05 L/s per sq. m) when tested according to **ASTM E 283-04** at the following test-pressure difference:

.1 FUSION™ DRILL FREE™ panel systems Test-Pressure Differential: Infiltration

 75 Pa @ 1.57 lbs/ft² : 0.001 L/s m² (0.0002 CFM/ft²)

300 Pa @ 6.24 lbs/ft² : 0.009 L/s m² (0.0017 CFM/ft²)

.4 **Water Penetration under Static Air Pressure**: No uncontrolled water penetration when tested according to **ASTM E 331-02** at the following test-pressure difference over a period of 15 continuous minutes:

.1 Test-Pressure Differential: *Maximum Pressure achieved* = **6.27 lbs/ft² @ 300 Pa**

*Note: No continuous streaming observed on simulated exterior sheathing.*

.5 **Water Penetration Resistance using Dynamic Pressure**: Any water that penetrated the exterior rain screen cladding was controlled and drained to the exterior with no continuous streaming observed. Tested according to **AAMA 508-14, Section 5.7, Referencing AAMA 501.1-05** at the following test-pressure over a period of 15 continuous minutes at velocity of 50 mph (80 km/h) and only 2.7% wetting of surface area, well less than the 5% allowable.

.1 Test-Pressure Differential: *Maximum Pressure achieved* = **6.24 lbs/ft² @ 300 Pa**

.6 **Pressure Equalization Behaviour Analysis**: The FUSION™ DRILLFREE™ rainscreen panel attachment system **meets the requirements** under **ASTM E1233/1233M-14** for Wind Gust Pressure Differential: *Not to exceed 50% of maximum pressure.*

.1 ***Maximum External Gust Pressure*** = 26.8 lbs/ft² @ 1,283 Pa = **23%** pressure differential, as required by AAMA 508-14, (ASTM E1233M-14).

.7 **Thermal Movements**: FUSION™ DRILLFREE™ ACM panel attachment system has been designed to accommodate vertical and horizontal thermal movement of components, preventing buckling, opening of joints and other detrimental effects when subjected to seasonal temperature cycles. Systems that incorporate enlarged holes or loose-fitting attachments to accommodate for thermal fluctuations, are NOT considered as equal or comparable in design or performance, to the FUSION™ DRILLFREE™ pressure equalized rainscreen panel system.

.1Temperature Change (Range):[120 deg F 67 deg C, ambient; 180 deg F 100 deg C , material surfaces ].

.8 **Fire Propagation Characteristics**: Aluminum Composite Material wall panel system NFPA 285 testing.

.1 FUSION™ DRILLFREE™ panel system **met** the Conditions of Acceptance of **NFPA 285**–2019 test criteria. See the Intertek test report available from Carter Architectural Panels, Inc., and on CADdetails.com. (NFPA Test Report with etalbond® 4mm FR core) (Report # 103843210SAT-003)

.2 1.6.8.1 Conditions of Acceptance are Supporting Evidence required for CCRR-0474

* 1. QUALITY ASSURANCE

 .1 Metal Wall Panel Manufacturer Qualifications: Minimum 3 years’ experience in metal fabrication and supplying metal wall panel systems and a Carter Architectural Panel Inc., approved FUSION™ manufacturer.

1. Metal Wall Panel Installer Qualifications: Minimum 3 years’ experience installing commercial metal wall panel systems.

 .3 Metal Wall Panel Manufacturers must be an approved FUSION™ Licensee and must manufacture FUSION™ architectural panels to the tolerances and attributes established under the provisions of FUSION™ North America.

1. Fabrication must be in accordance with the approved building plans and with Section 3.4 of the CCRR-0474.

1.8 TECHNICAL DATA

 Applicable Standards for the ACM component of the FUSION™ DRILLFREE™architectural panel systems:

RAINSCREEN TESTING

[**AAMA 508-14 Compliant**](http://www.carterfabricating.com/EVO%20Rivetless%20Panel%20AAMA%20508-07%20Compliant%20%28AAMA%20501.1-05%29.pdf)

AIR/WATER/WIND PERFORMANCE

[AAMA 501.1-05 (Dynamic)](http://www.carterfabricating.com/EVO%20Rivetless%20Panel%20AAMA%20508-07%20Compliant%20%28AAMA%20501.1-05%29.pdf)

[ASTM E 1233 (Modified)](http://www.carterfabricating.com/EVO%20Rivetless%20Panel%20AAMA%20508-07%20Compliant%20%28AAMA%20501.1-05%29.pdf)

[ASTM E 283 (Static)](http://www.carterfabricating.com/EVO%20Performance%20ASTM%20E283%20E331%20E330.pdf)

[ASTM E 330 (Static)](http://www.carterfabricating.com/EVO%20Performance%20ASTM%20E283%20E331%20E330.pdf)

[ASTM E 331 (Static)](http://www.carterfabricating.com/EVO%20Performance%20ASTM%20E283%20E331%20E330.pdf)

FIRE TEST METHOD

**NFPA 285-2019**

Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components

* 1. MOCK-UP

*SPEC NOTE: Mock-up is only specified for special or large projects and only upon*

*request.*

1. Provide a mock-up on building consisting of complete cladding system, including but not limited to metal furring, panels, securement devices, sealants, and moldings for approval. Cladding finish and moldings to be of finish and color as designated by the [Architect].

.2 Location of mock-up to be as directed by [Architect]. Size to be four panels minimum, in a 2 over 2 configuration.

.3 Modify mock-up as necessary for [Architect] approval. Mock-up [may] [may not] remain in place as part of completed work. Mock-up to represent standard for completed work.

* 1. DELIVERY, STORAGE, AND HANDLING
1. Handle and store products to prevent damage, soiling, and in accordance with manufacturer’s instructions.
2. Store packaged or bundled products in original and undamaged crates with manufacturer’s seals and labels intact. Do not remove from packaging or crates until required for installation.
	1. PACKAGING WASTE MANAGEMENT

.1 Return undamaged pallets and crates to manufacturer of systems employed. All other plastics, packaging foam, banding and fasteners are to be disposed of by panel installer.

* 1. WARRANTY

.1 ACM Panels: Provide manufacturer’s standard [1 year] [2 year] warranty against panel integrity.

.2 Finish Coating Performance: Provide manufacturer’s standard [20 year] warranty against fading, color change, chalking, peeling, cracking, or delaminating of the coating system.

## PART 2 – PRODUCTS

* 1. MANUFACTURERS

.1 Aluminum Composite Metal panels to be obtained as single source from Carter Architectural Panels approved FUSION™ DRILLFREE™ manufacturers.

 .2 FUSION™ DRILLFREE™ extrusion system to be obtained from Carter Architectural Panels Inc., Brampton, ON L6T 5H9; Tel: 905.487.1684; Canton, Georgia 30114; Tel: 770.345.9550; Mesa, AZ 85212; Tel: 480.899.3955

* 1. MATERIALS

*SPEC NOTE: Delete items not required.*

.1 ACM Wall Panels

.1 FUSION™ Drill Free™ [Pressure Equalized Rain-screen] [wet-seal] [dry-seal] wall cladding system.

.2 Thickness: [3 mm (0.118”)] [4 mm (0.157”)] [6 mm (0.236”].

1. Panel Depth: 25 mm (1”) plus 25 mm (1”) from panel depth to substrate i.e. 50mm (2”) from face to sub-girts.

 .4 Core: [Fire Rated (FR)] [Non-Combustible (A2)]

 .5 Aluminum Composite Material: etalbond® by ELVAL 4mm [FR]/[A2] Core

.6 Manufacturer’s standard, as shown on drawings, and as follows:

* 1. Z-girts: [18 ga.; 16 ga.] steel galvanized to ASTM A653 G90.
	2. Aluminum Extrusions: FUSION™ DRILLFREE™ extrusions, Mill finish (6061-T6).

.3 Rivets: FUSION™ double bulb structural aluminum, [counter sunk] [low domed].

* 1. FABRICATION

*SPEC NOTE: see Quality Assurance (1.7.1 thru .3 above for Manufacturer qualifications/criteria)*

 .1 ACM/MCM Wall Panel Fabrication must be in accordance with the approved local building plans [in consideration of CCRR-0474 Section 3.4]

[.1 ACM Formed Panel: Comprised of a fire-retardant/Non-combustible extruded core sandwiched between two nominal 0.020” coil coated 3105 H24 aluminum skins.]

[.2 FR/A2 ACM Formed Panel: Comprised of a one-hour fire rated, mineral-filled, fire-resistant/Non-combustible extruded core sandwiched between two nominal 0.020” coil coated 3105 H24 aluminum skins.]

.2 Fabrication Method: Rout and return system with non-welded corners and 90º back-cut edges.

.1 Fabrication Method: Prepare FUSION™ DRILLFREE™ extrusionsfor securing to ACM panel in accordance with manufacturer’s written instructions and in accordance with AAMA 508-14.

 .3 Fabricated Panel Tolerances

.1 Length: Plus 1.6 mm (0.062 inch).

.2 Width: Plus 1.6 mm (0.062 inch).

.3 Depth: Plus or minus 0.2 mm (0.008 inch).

 .4 Panel Bow: 0.8 percent maximum of panel length or width.

.5 Squareness: 5 mm (0.2 inch) maximum.

.4 Rain-screen Panels: Provide for positive drainage of condensation and water entering at joints to exterior face of wall in accordance with [NRC “Rain Screen Principles”]. Panels to have drainage holes in bottom of each panel measuring 10 mm (3/8”) diameter on 16” centers, to AAMA 508-14.

*SPEC NOTE: Finish below is shown as example only. Specify actual finish(es) as per ACM coil manufacturer.*

.5 Finishes

.1 PPG Duranar (PVdF) fluoropolymer containing 70% Kynar 500/Hylar 5000 resins to AAMA 620, [ color].

## PART 3 – EXECUTION

* 1. EXAMINATION

.1 Verify that substrate conditions are acceptable prior to installation of products. Commencement of work or any parts thereof indicate acceptance of prepared substrates.

.2 Surfaces to receive panel system barrier to be sound, dry, clean, and free from oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas to provide an even plane.

* 1. PREPARATION

.1 Protect adjacent work areas and finished surfaces from damage by this Section of Work.

* 1. INSTALLATION

.1 [When being installed within the HVHZ criteria, the FUSION™ DRILLFREE™ system must be installed as described in Sections 3, 4, 5 of the CCRR-0474 report].

.2 **CCRR-0473** recognizes the significance of a full system assembly and installation for real-world applications.

 .3 ACM Panels

* + - 1. Install panels plumb, level and true, and in accordance with manufacturer’s written instructions.
			2. Anchor panels securely in place in accordance with fabricator’s approved shop drawings.
			3. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels not to exceed 6.4 mm (0.25”) in 6.1 m (20 feet), non-cumulative.
	1. SITE QUALITY CONTROL

.1 Upon Owner’s request, provide wall panel fabricator’s site service or periodic site visit to inspect product installation in accordance with fabricator’s instructions.

 3.5 ADJUSTING

1. Repair panels with minor damage so that repairs are not discernible at a distance of 3.1m (10’-0”).
2. Remove and replace panels damaged beyond repair.
3. Remove protective film immediately upon completion of panel installation and prior to application of any joint sealants.

 3.6 CLEANING

.1 Clean installed products in accordance with manufacturer’s instructions prior to Owner’s acceptance.

* 1. WASTE MANAGEMENT

.1 Remove from site damaged panels, packaging, temporary coverings, protective film and other debris resulting from the Work of this Section.

* 1. PROTECTION
1. Protect installed panel finishes from damage during construction.
2. Provide protective measures as required to ensure that installed panels are not damaged by the work of other trades.

##  END OF SECTION