



*“Changing the Standard by Design”*  
BUILDING ENVELOPE SOLUTIONS

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## SECTION 07 42 43

# CARTER ARCHITECTURAL PANELS INC.

## FUSION™ DRILLFREE™ ALUMINUM COMPOSITE METAL (ACM) WALL PANEL SPECIFICATION

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

### PART 1 - GENERAL

#### 1.1 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.*

- .3 Accessories including Z-girts, roof caps, drip flashing, jamb flashing through wall flashing, and all other architectural trims, fasteners and vapor and air barriers.

#### 1.2 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]

### 1.3 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.

### 1.4 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].

### 1.5 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.
  - 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.

### 1.6 DESIGN & PERFORMANCE REQUIREMENTS

- 1 **Design**, fabricate and install an Aluminum composite material (ACM) pressure equalized rain-screen panel system in [polyethylene (PE)] [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 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™ panel system.
- .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* = **8,260 Pa<sup>1</sup> (172.5 lbs/ft<sup>2</sup>)**;  
(equivalent to **260 mph / 418 km/h** based on Ensewiler formula)
  - .2 Specified Design Load: 3,591 Pa (75.0 lbs/ft<sup>2</sup>)
  - .3 Positive Loading Net Deflection: (+3,591 Pa; 75.0 lbs/ft<sup>2</sup>) = 0.263 inches (6.7mm)
  - .4 Negative Loading Net Deflection: (-3,591 Pa; -75.0 lbs/ft<sup>2</sup>) = 0.234 inches (6.0mm)
- (<sup>1</sup> Cladding system did not disengage from the wall assembly. The FUSION™ DRILL FREE™ panel system did not fail at 8,260 Pa., whereas, the vertical supporting steel studs buckled in the center)
- .3 **Air Infiltration:** Air leakage of not more than 0.01 cfm/ lbs/ft<sup>2</sup> (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/ft<sup>2</sup> : 0.05 L/s m<sup>2</sup> (0.01 CFM/ft<sup>2</sup>)
      - 300 Pa @ 6.24 lbs/ft<sup>2</sup> : 0.05 L/s m<sup>2</sup> (0.01 CFM/ft<sup>2</sup>)
  - .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* = **20 lbs/ft<sup>2</sup> @ 957 Pa**  
*Note: No water penetration observed or droplets present on simulated exterior sheathing.*
  
- .5 **Thermal Movements:** FUSION™ DRILLFREE™ ACM panel 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™ panel system.
  - .1 Temperature Change (Range): [120 deg F 67 deg C , ambient; 180 deg F 100 deg C , material surfaces ].
  
- .6 **Fire Propagation Characteristics:** Aluminum Composite material wall panel system NFPA 285 testing.
  - .1 FUSION™ DRILLFREE™ panel system has been passed and approved by a qualified testing agency, certified to conduct the **NFPA 285 Fire Test Method** on wall panel assembly systems.

## 1.7 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. For list see [www.carterpanels.com](http://www.carterpanels.com)
- .2 Metal Wall Panel Installer Qualifications: Minimum 3 years' experience installing commercial metal wall panel systems.

## 1.8 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.

#### 1.9 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.

#### 1.10 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.

#### 1.11 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**

#### 2.1 MANUFACTURERS

- .1 Aluminum composite metal panels to be obtained as single source from Carter Architectural Panels approved FUSION™ manufacturers. For contact info see [www.carterpanels.com](http://www.carterpanels.com)

## 2.2 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.
- .2 Thickness: [3 mm (0.118")] [4 mm (0.157")] [6 mm (0.236)].
- .3 Panel Depth: 25 mm (1") plus 25 mm (1") from panel depth to substrate i.e. 50 mm (2") from face to sub-girts.
- .4 Core: [Polyethylene (PE)] [Fire Rated (FR)].
- .5 Aluminum Composite Material: Larson aluminum faced composite by Alucoil.
- .6 Manufacturer's standard, as shown on drawings, and as follows:
  - .1 Z-girts: 18 ga. steel galvanized to ASTM A653 G90.
  - .2 Aluminum Extrusions: Mill finish 6061-T6.
  - .3 Rivets: FUSION™ double bulb structural aluminum, counter sunk and color matched to panel.
  - .4 Sub-Girt Screws: #12 x 1" self-drilling, hex washer head, with Climaseal finish.

*SPEC NOTE: Re 2.02.6.5. Specify #10 x 1/2" fastener for metal substrate, #12 x 1-1/2" fastener for wood substrate, and Tapcon fastener for concrete substrate.*

- .5 Mid-Clip Screws: [#10 x 1/2", Type 410 S.S.] [ #12 x 1-1/2" self-drilling hex washer head, with Climaseal finish] [Tapcon 1/4" dia. x 2-3/4" 410 S.S. hex head].

### a. FABRICATION

#### .1 ACM Wall Panels

- [.1 PE ACM Pan Formed Panel: Comprised of a polyethylene extruded core

sandwiched between two nominal 0.020” coil coated 3105 H24 aluminum skins.]

[.2 FR ACM Pan Formed Panel: Comprised of a one hour fire rated, mineral-filled, fire-resistant 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 90° back-cut edges.

.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.

.2 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.

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

.3 Finishes

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

## **PART 3 – EXECUTION**

### **3.1 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.

## 32 PREPARATION

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

## 33 INSTALLATION

### .1 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.

## 34 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 3.1 m (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.



### 3.7 WASTE MANAGEMENT

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

### 3.8 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**