SECTION 07 42 43

EVO™ 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

1.01 SECTION INCLUDES

.1 Aluminum composite material (ACM) [pressure equalized rainscreen] [dry-seal] panels.

.2 [Supply only] [Supply and install].

. SPEC NOTE: Re 101.3. 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 vapour and air barriers.

1.02 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]

1.03 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.

1.04 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].

1.05 SUBMITTALS

.1 Under provisions of [Section 01 33 00], provide the following:

.1 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.

.2 Product Data: manufacturer's printed sheets or pages illustrating the products to be incorporated into the project.

.3 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.

.4 Product Samples: 150 mm x 150 mm (6" x 6") showing specified finish for each location.

.5 Product Test Reports: Indicate compliance of product requirements from qualified independent testing agency.

.6 Manufacturer's Instructions: Indicate installation requirements, rough-in dimensions, and special procedures.

.7 Sample Warranty: As specified by this Section.

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

1.06 QUALITY ASSURANCE

.1 Metal Wall Panel Manufacturer Qualifications: Minimum 10 years' experience in metal fabrication and supplying metal wall panel systems.

.2 Metal Wall Panel Installer Qualifications: Minimum 10 years' experience installing commercial metal wall panel systems.

.3 Metal Wall Panel Manufacturers must be an approved EVO™ Licensee and must manufacture EVO™ architectural panels to the tolerances and attributes established

under the provisions of the EVO™ North American Licensees and their standards of conduct.

Preferred approved EVO™ Manufacturer: **ACMpanelworx**
(visit evopanels.com for complete list of manufacturers)

1.07 DESIGN & PERFORMANCE REQUIREMENTS

.1 **Design**, fabricate and install an Aluminum composite material (ACM) pressure equalized rainscreen panel system in [polyethylene (PE)] [fire-rated (FR)] core, to the following standards & requirements:

.1 The ACM panel design MUST be 100% free of all fasteners in both the panel face and panel perimeter. All mounting hardware must also be fully concealed with color matched splines utilizing the same PPG 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, without the use of rivets or screws, meets the description of an engineered EVO™ panel design. 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 (1.07.1.1; 1.07.1.2), 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 EVO™ architectural panel system.

.2 **Structural Performance**: EVO™ 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* = **13,325 Pa[1] (278 lbs/ft²)**; (*equivalent to* **330 mph** / **531 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) = 0.204 inches (5.2mm)

.4 Negative Loading Net Deflection: (-3,591 Pa; -75.0 lbs/ft²) = 0.258 inches (6.6mm)

([1] Cladding system did not disengage from the wall assembly. The EVO™ Rivetless panel system did not fail at 13,325 Pa., whereas, the vertical supporting steel studs buckled in the center)

.3 **Air Infiltration**: Air leakage of not more than 0.06 cfm/ lbs/ft² (0.3 L/s per sq. m) when tested according to **ASTM E 283-04** at the following test-pressure difference:

.1 EVO™ Rivetless panel systems Test-Pressure Differential : Infiltration

75 Pa @ 1.57 lbs/ft² : 0.05 L/s m² (0.01 CFM/ft²)
300 Pa @ 6.24 lbs/ft² : 0.05 L/s m² (0.01 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* = **20 lbs/ft² @ 957 Pa**

Note: No water penetration observed or droplets present on simulated exterior sheathing.

.5 **Thermal Movements**: EVO™ 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 EVO™ architectural 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; CAN/ULC-S134-13.

.1 EVO™ Rivetless panel system has been passed and approved by (Intertek, EXOVA) a qualified testing agency, certified to conduct the **NFPA 285 Fire Test Method** on wall panel assembly systems.

.2 EVO™ Rivetless panel system has been passed and approved by (Intertek, EXOVA) a qualified testing agency, certified to conduct the **CAN/ULC-S134-13 Fire Test Method** on wall panel assembly systems.

.3 Complying under the acceptance criteria of NFPA 285 testing, necessitates no deviations from the engineered design, components or the specified EVO™ Rivetless panel system assembly.

1.8 TECHNICAL DATA

Applicable Standards for the ACM component of the EVO™ panel systems:

RAINSCREEN TESTING
AAMA 508-07 Compliant

AIR/WATER/WIND PERFORMANCE
AAMA 501.1-05 (Dynamic)
ASTM E 1233 (Modified)
ASTM E 283 (Static)
ASTM E 330 (Static)
ASTM E 331 (Static)

EVOSTONE – Evaluation of `EVOSTONE' Coating System testing in accordance with:

ASTM B117-11 (Salt Spray)
ASTM D4541-09 (Adhesion Strength)
ASTM D2794 (Impact Resistance)
ASTM D6944-09 (Thermal Cycling)
ASTM D2247-11 (Humidity Resistance)
ASTM G155 (Accelerated Weathering)
ASTM D1654 (Corrosion Creepback)

FIRE TEST METHOD

NFPA 285
Standard Fire Test Method For Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

CAN/ULC-S134-13
Standard Method of Fire Test of Exterior Wall Assemblies

1.09 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 mouldings for approval. Cladding finish and mouldings to be of finish and colour 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. Alternate pattern can be requested by Architect.

.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.

1.10 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.

1.11 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.

1.12 ENVIRONMENTAL CONSIDERATIONS (LEED)

.1 *ACM Coil MR (Material and Resources) Credit*

Depending on the ACM coil manufacturer, the following is an example of the LEED credits that can be attained with aluminum composite materials. Points may vary with manufacturer.

MR Credit 4: Recycled Content: One point is awarded if the sum of post-consumer recycled content plus one half of the pre-consumer content is at least 10%. If the same value is at least 20% as determined by the same method then 2 points are awarded.

Product Summary	Total Content (100% post + 50% Pre)	LEED Points
3mm PE	37%	2 points
4mm PE	35%	2 points
4mm FR	17.3%	1 point
6mm PE	32.5%	2 points

.2 6061-T6 EVO™ Extrusion

Material percentages may vary from batch to batch. Standard blending formula calls for a **minimum of 10% post-consumer aluminum in every blend**. The final percentage is between 10% and 15% on 6063 type grades. Other alloys such as 6061 often have a higher percentage of post-consumer scrap. These alloys can contain in excess of **30%**. The EVO™ architectural panel system is produced using 6061-T6.

1.13 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, colour change, chalking, peeling, cracking, or delaminating of the coating system.

PART 2 – PRODUCTS

2.01 APPROVED MANUFACTURERS

.1 ACMpanelworx - Composite Panel Manufacturer, 357 Croft Dr, Windsor, ON N8N 2L9 acmpanelworx.com

.2 Visit evopanels.com for complete list of manufacturers.

2.02 MATERIALS

.1 ACM Wall Panels

.1 EVO™ Architectural Panels by ACMpanelworx - Pressure Equalized Rainscreen [wet-seal] [dry-seal] wall cladding.

.2 Thickness: [4 mm (0.157")] [6 mm (0.250")].

.3 Panel Depth: (1.75") from face of panel too substrate.

.4 Core: [Polyethylene (PE)] [Fire Rated (FR)].

.5 Aluminum Composite Material: [Larson aluminum faced composite panel by Alucoil]; [Reynobond by Alcoa]; [Alpolic by Mitsubishi]; [Alucobond by 3A Composites USA].

.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: Mill finish (6061-T6)

2.3 FABRICATION

SPEC NOTE: see Quality Assurance (1.06.3 above for Manufacturer qualifications/criteria)

.1 ACM Wall Panels

[.1 PE ACM Pan Formed Panel: Comprised of a polyethylene extruded core sandwiched between two nominal 0.020" coil coated 3000 or 5000 series 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 3000 or 5000 series aluminum skins.]

.2 Fabrication Method: Rout and return system utilizing a CNC cutting table with automatic pressure foot to control cutting depth and vacuum bed for sheet support.

.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 Rainscreen Panels: Provide for positive drainage of condensation and water entering at joints to exterior face of wall in accordance with "Rain Screen Principles". Panels to have drainage holes in bottom of each panel measuring 10 mm (3/8") diameter on 610mm (24") centres, to AAMA 508-07.

SPEC NOTE: Finish (2.03.5.1-.5.4) below is shown as example only. Specify actual finish(es) as per ACM coil manufacturer; (see 2.02.5 Materials above)

.5 Finishes

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

.2 EVOStone – EVO nano stone, special coatings #09900. High solids exterior modified acrylic coating. Conforms to CGSB 1-162M & ASTM – 0822 A/W, [_____colour].

.3 EVOWood – (PVdf) fluoropolymer containing 70% Kynar 500/Hylar 5000 resins to AAMA 620, [_____ colour].

.4 EVOExotic – PVdf non-standard finishes; MCM natural metals [elZinc, Stainless Steel, Copper, Brushed aluminum].

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify that substrate conditions are acceptable (plumb and level) 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.

3.2 PREPARATION

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

3.3 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.

3.4 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.

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