This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) Project Resource Manual (PRM), including MasterFormat™, SectionFormat™ and PageFormat™. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies composite metal panels for exterior and interior applications marketed under the ALPOLIC® trade name by Mitsubishi Plastics Composites America, Inc. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI MasterFormat for other section numbers and titles.

SECTION 07 42 13
METAL WALL PANELS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Composite Metal panels.
   1. Applications of composite metal panels include:
      a. Exterior installation of composite metal panels.
      b. Interior installation of composite metal panels.

Specifier Note: Revise Paragraph below to suit project requirements. Add section numbers and titles per CSI MasterFormat and specifier’s practice.

B. Related Sections: Section(s) related to this section include:
   1. Cold-Formed Metal Framing: Division 05 Cold-Formed Metal Framing Sections.
   2. Sheet Metal Flashing and Trim: Division 07 Flashing and Sheet Metal Sections.
   5. Glazing: Division 08 Glass and Glazing Section.
   6. Metal Framed Curtain Wall: Division 08 Glazed Curtain Wall Sections.

Specifier Note: Article below can be omitted when specifying manufacturer’s proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 01 References Section may establish the edition date of standards. This Article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

1.02 REFERENCES

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

B. ASTM International (ASTM):

C. American Architectural Manufacturers Association (AAMA):

D. Underwriters Laboratories Inc. (UL):
1. UL 94 Standard for Flammability of Plastic Materials for Parts in Devices and Appliances.

E. International Organization for Standardization (ISO):

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional, not dimensional, tolerances of a complete system. Limit descriptions to composite and operational properties to extent necessary to link multiple components of a system and to interface with other systems.

1.03 SYSTEM DESCRIPTION

Specifier Note: Edit Paragraph below to suit project requirements.

A. Performance Requirements: Provide composite metal panels which have been manufactured, fabricated and installed to withstand loads from deflection and thermal movement and to maintain performance criteria stated by manufacturer without defects, damage or failure.

Specifier Note: Three subparagraphs below are generally applicable only to curtain wall systems and large wall areas. Delete this Article altogether, or modify it as appropriate for simple composite panel installations. Alternatively, refer to system manufacturer’s technical data for additional details. Edit text to suit project requirements; add text for performance criteria as applicable below.

B. Deflection and Thermal Movement: Provide systems that have been tested and certified to conform to the following criteria under wind loading of [Specify test loading] psf ( __ kPa) inward and [Specify test loading] psf ( __ kPa) outward:

1. Normal Deflection: Deflection of perimeter framing member not to exceed L/175 normal to plane of the wall; deflection of individual panels not to exceed L/60.
2. Anchor Deflection: At connection points of framing members to anchors, anchor deflection in any direction not to exceed 1/16 inch (1.6 mm).
3. Thermal Movements: Allow for free horizontal and vertical thermal movement, due to expansion and contraction of components over a temperature range from [Specify temperature range] ( ___ – ___ degrees F) ( ___ – ___ degrees C).
   a. Buckling, opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects of thermal movement will not be permitted.
   b. Fabrication, assembly and erection procedures shall take into account the ambient temperature range at the time of the respective operation.

C. Water and Air Leakage: Provide systems that have been tested and certified to conform to the following criteria:

1. Air Leakage (ASTM E283): Not more than 0.06 (cfm)/sf of wall area (0.003 (L/s) m²), when tested at 1.57 psf (0.075 kPa).
2. Water Penetration (ASTM E331): No water infiltration under static pressure at a differential of 10% of inward acting design load, 6.24 psf (0.299 kPa) minimum, after 15 minutes.
   a. Water penetration is defined as the appearance of uncontrolled water in the wall.
   b. Wall design shall feature provisions to drain to the exterior face of the wall any leakage of water at joints and any condensation that may occur within the construction.

D. Structural: Provide systems that have been tested in accordance with ASTM E330 at a design pressure of [Specify pressure] psf ( __ kPa) and have been certified to be without permanent deformation or failures of structural members.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this Article with Architect’s and Contractor’s duties and responsibilities in Conditions of the Contract and Division 01 Submittal Procedures Section.

1.04 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal
Procedures Section.

B. Product Data: Submit product data, including manufacturer’s SPEC-DATA product sheet, for specified products.

C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors and textures.
   1. Include details showing thickness and dimensions of the various system parts, fastening and anchoring methods, locations of joints and gaskets and location and configuration of joints necessary to accommodate thermal movement.

D. Samples: Submit selection and verification samples for finishes, colors and textures.
   1. Selected Samples: Manufacturer’s color charts or chips illustrating full range of colors, finishes and patterns available for composite metal panels with factory-applied finishes.
   2. Verification Samples:
      a. Structural: 12 inch × 12 inch (305 × 305 mm) sample composite panels in thickness specified, from an available stock color, including clips, anchors, supports, fasteners, closures and other panel accessories, for assembly approval. Include panel assembly samples not less than 24 inches × 24 inches (610 × 610 mm), showing 4-way joint.
      b. Include separate sets of draw down samples on aluminum substrate, not less than 3 inches × 5 inches (76 × 127 mm), of each color and finish selected, for color approval. Larger samples of standard colors are available with production applied coatings.

E. Quality Assurance Submittals: Submit the following:
   1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
   2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
   3. Manufacturer’s Instructions: Manufacturer’s installation instructions.
   4. Manufacturer’s Field Reports: Manufacturer’s field reports.

F. Closeout Submittals: Submit the following:
   1. Warranty: Warranty documents specified herein.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate Article below with Division 01 Quality Assurance Section.

1.05 QUALITY ASSURANCE

A. Qualifications:
   1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in the installation of work similar to that required for this project.

Specifier Note: Retain Paragraph below to suit project requirements; otherwise, delete Paragraph below.

   2. Manufacturer Qualifications: Company with a minimum of 5 years of continuous experience manufacturing panel material of the type specified:
      a. Able to provide specified warranty on finish.
      b. Able to provide a list of 5 other projects of similar size, including approximate date of installation and the name of the Architect for each.
      c. Able to produce the composite material without outsourcing of coating or lamination process.
      d. Able to provide certificate of registration of ISO 9001-2000.
   3. Fabricator Qualifications: Company with at least 3 years of experience on similar sized metal panel projects and qualified by the panel material manufacturer. Capable of providing field service representation during construction.

Specifier Note: Retain Paragraph below for erected assemblies, either onsite or offsite, required for review of construction, coordination of work of several sections, testing or observation of operation. Mock-ups establish standards by which work will be judged. Coordinate below with Division 01 Quality Control, Mock-Up Requirements Section.

B. Mock-Ups: Install at project site a job mock-up using acceptable products and approved installation methods. Obtain Owner’s and Architect’s acceptance of finish color (draw down samples to be used for color approval of nonstandard coil coated colors), texture and pattern and workmanship standard. Comply with Division 01 Quality Control, Mock-Up Requirements Section.
Specifier Note: Edit Paragraph below to specifying mock-up size.

1. Mock-up Size: [Specify size].
2. Maintenance: Maintain mock–up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

Specifier Note: Coordinate Paragraph below with Division 01 Project Management and Coordination, Project Meetings Section.

C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, installation instructions and warranty requirements. Comply with Division 01 Project Management and Coordination, Project Meetings Section.

D. Field Quality Control: Comply with panel system manufacturer's recommendations and guidelines for field forming of panels.

Specifier Note: Article below should include special and unique requirements. Coordinate Article below with Division 01 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 01 Product Requirements Sections.
B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
   1. Protection: Protect finish of panels by applying heavy duty removable plastic film during production.
   2. Delivery: Package composite wall panels for protection against transportation damage. Provide markings to identify components consistently with drawings.
   3. Handling: Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.
D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
   1. Storage: Store panels in well-ventilated space out of direct sunlight.
      a. Protect panels from moisture and condensation with tarpaulins or other suitable weathertight covering installed to provide ventilation.
      b. Slope panels to ensure positive drainage of any accumulated water.
      c. Do not store panels in any enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).
   2. Damage: Avoid contact with any other materials that might cause staining, denting or other surface damage.

1.07 PROJECT CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

Specifier Note: Coordinate Article below with Conditions of the Contract and with Division 01 Closeout Submittals, Warranty Section.

1.08 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not a limitation of, other rights Owner may have under the Contract Documents.

Specifier Note: Coordinate Paragraph below with manufacturer's warranty requirements.

1. Warranty Period:
   a. Panel Integrity: 10 years commencing on Date of Substantial Completion.
   b. Finish: [Specify number of years] commencing on Date of Substantial Completion.

PART 2 PRODUCTS

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases
may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 COMPOSITE METAL PANELS

A. Manufacturer: Mitsubishi Plastics Composites America, Inc.

Specifier Note: Paragraph below is an addition to CSI SectionFormat and a supplement to MANU-SPEC. Retain or delete Paragraph below per project requirements and specifier’s practice.

1. Contact: 401 Volvo Parkway, Chesapeake, VA 23320; Telephone (800) 422-7270; Fax: (757) 436-1896; E-mail: info@alpolic.com; website: www.alpolic-northamerica.com.

B. Proprietary Product: ALPOLIC Composite Metal Panels.

1. Approved Fabricator - Acmpanelworx Inc.
   357 Croft Drive, Tecumseh, Ontario N8n-2L9, telephone (519) 739-2380; fax (519) 739-1609; e-mail mark@acmpanelworx.com; website www.acmpanelworx.com.

Specifier Note: Edit Paragraph below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 01 Project Requirements, Product Substitutions Procedures Section.

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions: No substitutions permitted.

Specifier Note: Retain article below for alternates required for project; state wall panel work covered by alternate. Coordinate with Part 1 General Summary Article herein, applicable Division 01 Sections, and other Bid and Contract Documents. Consult Mitsubishi Plastics Composites America/ALPOLIC on the use of alternates. Delete article below if alternates are not required.

2.03 ALTERNATES

A. Contract Provisions and Division 01 Requirements: [Specify coordination with provisions and requirements].

B. Alternates:
   1. Base Bid/Contract Manufacturer: [Specify base bid/contract manufacturer].
      a. Product: [Specify product base bid/contract brand/trade name with product attributes and characteristics].
   2. Alternate No. [Specify #]: [Specify alternate manufacturer].
      a. Product: [Specify product alternate brand/trade name with product attributes and characteristics].
   3. Alternate No. [Specify #]: [Specify alternate manufacturer].
      a. Product: [Specify product alternate brand/trade name with product attributes and characteristics].

2.04 COMPOSITE METAL PANEL MATERIALS

A. Composite Metal Panels:
   1. Core: Thermoplastic material that meets performance characteristics specified when fabricated into composite assembly.
   2. Face Sheets: Aluminum alloy 3105 H14, 0.020 inch (0.51 mm) thick and as follows: [Choose coil or spray as applicable to quantity].
      a. Coil coated with a fluoropolymer paint finish that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.
      b. Spray coated with specified finish [Less than 1000 ft² (93 m²) quantities].
      c. Thermally bonded in a continuous process, under tension, to the core material.
   3. Bond Integrity: Tested for resistance to delamination as follows:
      a. Peel Strength (ASTM D1781): 22.5 in-lb/in (100 N-m/m) minimum.
      b. No degradation in bond performance after 8 hours of submersion in boiling water and after 21 days of immersion in water at 70 degrees F (21 degrees C).

Specifier Note: Delete Paragraph above and retain following paragraph for quantities less than 2000 ft² (186 m²).

b. Fire Performance:
   a. Flamespread (ASTM E84): 25 maximum (4 and 6 mm).
   b. Smoke Developed (ASTM E84): 450 maximum (4 and 6 mm).
   c. Surface Flammability (Modified ASTM E108): Pass (4 and 6 mm).
   d. V-O Rating (4 mm): Comply with UL 94.
B. Production Tolerances:
1. Width: +/- 2 mm.
2. Length: +/- 4 mm.
3. Thickness (4 mm Panel): +/- 0.008 inch (0.2 mm).
4. Thickness (6 mm Panel): +/- 0.012 inch (0.3 mm).
5. Bow: Maximum 0.5% length or width.
6. Squareness: Maximum 0.2 inch (5 mm).
7. Edges of sheets shall be square and trimmed.

Specifier Note: Edit Paragraph below. Select required panel thickness.

C. Panel Thickness: [4 mm] [6 mm].

2.05 ACCESSORIES
A. General: Provide fabricator’s standard accessories, including fasteners, clips, anchorage devices and attachments.

2.06 RELATED MATERIALS
A. General: Refer to other related sections for related materials, including cold-formed metal framing, flashing and trim, joint sealers, aluminum windows, glass and glazing and curtain walls.

2.07 FABRICATION
A. General: Shop fabricate to sizes and joint configurations indicated on the drawings.
1. Where final dimensions cannot be established by field measurements, provide allowance for field adjustment as recommended by the fabricator.
2. Form panel lines, breaks and angles to be sharp and true, with surfaces that are free from warp or buckle.
3. Fabricate with sharply cut edges, with no displacement of aluminum sheet or protrusion of core.

2.08 FINISHES
Specifier Note: Retain or delete Paragraph below per project requirements. Refer to manufacturer’s SPEC-DATA® sheet for availability of finishes and colors.

A. Factory Finish: A fluoropolymer paint finish that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.

2.09 SOURCE QUALITY
A. Source Quality: Obtain composite panel products from a single manufacturer.

PART 3 EXECUTION
Specifier Note: Article below is an addition to the CSI SectionFormat and a supplement to MANU-SPEC. Revise Article below to suit project requirements and specifier’s practice.

3.01 MANUFACTURER’S INSTRUCTIONS
A. Compliance: Comply with manufacturer’s product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

3.02 EXAMINATION
A. Site Verification of Conditions: Verify that substrate conditions are acceptable for product installation.

3.03 PREPARATION
A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

Specifier Note: Coordinate Article below with fabricator’s recommended installation details.

3.04 INSTALLATION
A. General:
1. Install panels plumb, level and true, in compliance with fabricator’s recommendations.
2. Anchor panels securely in place, in accordance with fabricator’s approved shop drawings.
3. Comply with fabricator’s instructions for installation of concealed fasteners and with provisions of Section 07 90 00 for installation of joint sealers.
4. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels: 0.25 inch (6.4 mm) in 20 feet (6.1 m), non-cumulative.
3.05 FIELD QUALITY REQUIREMENTS
Specifier Note: Edit Paragraph below. Establish number and duration of periodic site visits with Owner and fabricator, and specify below. Consult fabricator for services required. Coordinate Paragraph below with Division 01 Quality Assurance Section. Delete if fabricator’s field service not required.

A. Fabricator’s Field Services: Upon Owner’s request, provide fabricator’s field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with fabricator’s instructions.

Specifier Note: Coordinate below Article with Division 01 Execution Requirements, Starting and Adjusting, Cleaning and Protecting Installed Construction Section.

3.06 ADJUSTING
A. Adjusting:
   1. Repair panels with minor damage such that repairs are not discernible at a distance of 10 feet (3.1 m).
   2. Remove and replace panels damaged beyond repair.
   3. Remove protective film immediately after installation of joint sealers and immediately prior to completion of composite metal panel work.
   4. Remove from project site damaged panels, protective film and other debris attributable to work of this section.

Specifier Note: Coordinate Article below with Division 01 Execution Requirements, Cleaning Section.

3.07 CLEANING
A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer’s instructions prior to Owner’s acceptance. Remove construction debris from project site and legally dispose of debris.

Specifier Note: Coordinate Article below with Division 01 Execution Requirements Section.

3.08 PROTECTION
A. Protection: Protect installed product’s finish surfaces from damage during construction.
   1. Institute protective measures as required to ensure that installed panels will not be damaged by work of other trades.

END OF SECTION
PERFORMANCE EVALUATION OF THE “PX-10 DRY JOINT PANEL SYSTEM”
IN ACCORDANCE WITH AAMA 508-14 FOR PRESSURE EQUALIZATION
BEHAVIOR & WATER PENETRATION RESISTANCE

Report to: ACM Panelworx Inc.
357 Croft Drive
Tecumseh, ON
N8N 2L9

Attention: Mr. Mark Mrkalj

Telephone: 519-739-2380
E-mail: mark@acmpanelworx.com

Report No.: 15-06-M0059
8 Pages, 3 Appendices

Proposal No.: 14-006-317568

Date: May 8, 2015
1.0 INTRODUCTION

At the request of ACM Panelworx Inc., Exova was retained to evaluate the "PX-10 Dry Joint Panel System" exterior wall panel system in accordance with AAMA 508-14 for pressure equalization behavior, water penetration and structural resistance as outlined in Proposal number 14-006-317568.

Upon receipt, the specimen was assigned the following Exova Specimen Number:

**Client Specimen Description**  
PX-10 Dry Joint Panel System  
("T" Panel Scheme / 3 panels, not individually pressure isolated)

**Exova Specimen No.**  
15-06-M0059

2.0 PROCEDURE

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems – Pressure Equalization Behaviour</td>
<td>AAMA 508-14, Section 5.5 – Referencing ASTM E1233 (Modified)</td>
</tr>
<tr>
<td>Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems – Water Penetration Resistance</td>
<td>AAMA 508-14, Section 5.6 – Referencing ASTM E331</td>
</tr>
<tr>
<td>Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems – Dynamic Water Test</td>
<td>AAMA 508-14, Section 5.7 – Referencing AAMA 501.1-05</td>
</tr>
</tbody>
</table>

Note: SI units are the primary units of measure.

**Test Wall Section Description & Details:**

The back-up test wall section (air / water barrier) was constructed in an Exova test frame as per the detail drawing below in accordance with AAMA 508-14, Section 5.0:

![Figure 1 – Back-up Test Wall Framing Construction](image-url)
Upon completion of the back-up wall, the Plexiglas joints and screw-heads were sealed to ensure the assembly was air-tight. After the air leakage validation for tightness was completed, as prescribed by AAMA 508-14, Section 5.2.2 & Figure 1A, three (3) mm diameter holes were introduced equally spaced 150 mm above horizontal seams and above the base of the mock-up in order for the air / water barrier to have an air leakage rate of 0.6 L/s·m².

The application of the cladding system on the test back-up wall was performed by ACM Panelworx Inc. authorized personnel on March 27, 2015. As permitted by AAMA 508-14, Note 5, the perimeter of the specimen was sealed to the fixture that the wall section was constructed into. No drainage/vent holes or critical areas of the specimen that would be affected by water infiltration / drainage or differential pressure were obstructed.

Using the procedure outlined in AAMA 508-14, Section 5.5, the pressure cycling tests were conducted as specified in ASTM E1233. However, ASTM E1233 was modified to incorporate a positive pressure from 240 Pa to 1200 Pa to 240 Pa based on a maximum average of three seconds for 100 cycles as per AAMA 508-14.

Upon completion of the pressure equalization behavior test, the AAMA 508-14, Section 5.6, water penetration test at 300 Pa for fifteen minutes was conducted.

Upon completion of the dynamic water penetration test as outlined in AAMA 508-14, Section 5.7, referencing AAMA 501.1-05, testing was conducted in accordance with AAMA 508-14, Section 5.8 referencing ASTM E330-00 for Structural Performance.

**Test Dates**

- Pressure Equalization Behaviour (AAMA 508-14, Section 5.5) April 7, 2015
- Water Penetration Resistance (AAMA 508-14 Section 5.6) April 7, 2015
- Dynamic Water Penetration Resistance (AAMA 508-14 Section 5.7) April 11, 2015
- Structural Performance (AAMA 508-14 Section 5.8) May 8, 2015

**Outdoor Conditions during Test (April 7, 2015):**

- Temperature: 20.6 °C
- Relative Humidity: 42.3 %RH
- Barometric Pressure: 102.8 kPa *(Environment Canada, Toronto Pearson International Airport)*
# RESULTS

## Table 1 – Pressure Equalization Behavior Analysis

<table>
<thead>
<tr>
<th>Compartments Tested</th>
<th>Maximum External Gust Pressure of Pulse (Pa)</th>
<th>Maximum Cavity Pressure of Pulse (Pa)</th>
<th>Requirements</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Compartment</td>
<td>1193</td>
<td>1219</td>
<td>Pressure differential on rain screen cladding shall not exceed 50% of maximum wind gust pressure</td>
<td>&lt; 0.08 seconds</td>
</tr>
</tbody>
</table>

Pressure equalization graphs are located in Figure 2.

- Air Leakage of Back-Up Wall (air / water barrier) 0.58 L/sm²
- Ratio of cavity volume to vent area (Upper Panels): 592.4 m³/m²
- Ratio of cavity volume to vent area (Lower Panel): 293.7 m³/m²

![Pressure Equalization Behavior](image)

**Figure 2 – Pressure Equalization Behavior**
### Table 2 – Static Water Penetration Resistance

**AAMA 508-14, Section 5.6, Referencing ASTM E331-00 (2009)**

**Exova Specimen Number: 15-06-M0059**

<table>
<thead>
<tr>
<th>Test Pressure (Pa)</th>
<th>Requirements</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 300 Pa (15-Minutes) | All water that penetrates the exterior rain screen cladding shall be controlled and drained to the exterior. All water that contacts the air / water barrier shall be visually observed and recorded:  
   a) Water mist or droplets on the air/water barrier surface; and/or  
   b) Water in continuous stream on the air/water barrier surface.  
   Failure shall be defined as water mist or water droplets appearing in excess of 5% of the air/water barrier surface, or continuous streaming at any location on the air/water barrier. |
|                    | No water mist and/or droplets were observed.  
   No continuous streaming was observed. |
|                    | Meets Requirement |

### Table 5 – Water Penetration Resistance Using Dynamic Pressure

**AAMA 508-14 Section 5.7, Referencing AAMA 501.1-05**

**Exova Specimen Number: 15-06-M0059**

<table>
<thead>
<tr>
<th>Test Pressure (Pa)</th>
<th>Requirements</th>
<th>Test Results</th>
<th>Comment</th>
</tr>
</thead>
</table>
| 300 Pa(2) (15-Minutes) | All water that penetrates the exterior rain screen cladding shall be controlled and drained to the exterior. All water that contacts the air / water barrier shall be visually observed and recorded:  
   a) Water mist or droplets on the air/water barrier surface; and/or  
   b) Water in continuous stream on the air/water barrier surface.  
   Failure shall be defined as water mist or water droplets appearing in excess of 5% of the air/water barrier surface, or continuous streaming at any location on the air/water barrier. |
|                    | No water mist and/or droplets were observed. |
|                    | Meets Requirements |

(2) 300 Pa = 22.1 m/s (or 50 mph / 80.5 km/h). Calculation based on the Ensewiler formula, where $P = 0.613 \cdot V^2$, $V$ is m/s & $P$ is N/m$^2$
Table 3 – Support Wall Deflection Measurements - Infiltration
AAMA 508-14, Section 5.8, Referencing ASTM E330(3)
Exova Specimen Number: 15-06-M0059

<table>
<thead>
<tr>
<th>Pressure Criteria</th>
<th>Test Pressure (Pa)</th>
<th>Gauge No. and Deflection (mm)</th>
<th>Net Deflection (Center Stud)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Design Load(1)</td>
<td>1755 (37 psf)</td>
<td>-2.5</td>
<td>-0.2</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>-0.1</td>
<td>-0.4</td>
</tr>
<tr>
<td>150% Design Load(2)</td>
<td>2640 (55 psf)</td>
<td>-4.8</td>
<td>-1.2</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>0.2</td>
<td>-0.3</td>
</tr>
</tbody>
</table>

* Gauge deflection locations found on the following page in Figure 3

Table 4 – Support Wall Deflection Measurements - Exfiltration
AAMA 508-14, Section 5.8, Referencing ASTM E330(3)
Exova Specimen Number: 15-06-M0059

<table>
<thead>
<tr>
<th>Pressure Criteria</th>
<th>Test Pressure (Pa)</th>
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<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Design Load(1)</td>
<td>1755 (37 psf)</td>
<td>4.8</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>150% Design Load(2)</td>
<td>2640 (55 psf)</td>
<td>6.9</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>1.1</td>
<td>1.7</td>
</tr>
</tbody>
</table>

* Gauge deflection locations found on the following page in Figure 3

Positive Loading Net Deflection Design Load: (+1915 Pa) = 4.0 mm < 16.4 mm Requirement
Negative Loading Net Deflection Design Load (-1915 Pa) = 7.4 mm < 16.4 mm Requirement
Positive Loading Net Deflection 150% Design Load (+2873 Pa) = 6.4 mm < 16.4 mm Requirement
Negative Loading Net Deflection 150% Design Load (+2873 Pa) = 10.2 mm < 16.4 mm Requirement

(1) 1,755 Pa = 53.5 m/s (or 120 mph / 193 km/h). Calculation based on the Enswiler formula,
where \( P = 0.613 \cdot V^2 \), \( V \) is m/s & \( P \) is N/m²

(2) 2,640 Pa = 65.6 m/s (or 147 mph / 236 km/h). Calculation based on the Enswiler formula,
where \( P = 0.613 \cdot V^2 \), \( V \) is m/s & \( P \) is N/m²

(2) AAMA 508-14, Section 5.8 states: “When testing the actual air/water barrier for a project specific system,
perform static structural performance test ASTM E330 at 0.5, 1.0 and 1.5 times the specified positive and
negative design pressures.” As the testing outlined in this report was not for a project specific system, a
design pressure was not outlined. However at the request of ACM Panelworx, Exova performed
structural testing of the rainscreen system in accordance with ASTM E330-00 to a maximum pressure of
±2,640 Pa (147 km/h) for informational purposes.
4.0 SYSTEM MODIFICATIONS

No modifications were made to the system as shown respectively in Appendix A.

5.0 DISCUSSION

The ACM Panelworx Inc. “PX-10 Dry Joint Panel System” (Exova Specimen No.:15-06-M0059) identified in this report met the requirements of AAMA 508-14 for cavity pressure differential, time shift of pulse and static and dynamic water penetration.

The system contained a cavity volume to vent area ratio of 592.41 m$^3$/m$^2$ (Upper Panel) & 293.66 m$^3$/m$^2$ (Lower Panels) and used two (2) 38mm x 8mm rectangular drain/weep holes for the upper panel and two (2) 38mm x 8mm rectangular drain/weep holes on each of the lower panels.

This report is not intended as a comprehensive evaluation of the system regarding performance and application to specific buildings.
6.0 REPORT REVISION HISTORY

**Date:**  
2015-05-08

**Revision:**  
Original Document

**Comments:**  
N/A

Reported by:  

Authorized by:  

Edsel Lopez, Technologist, Ext. 11511  
Technologist, Building Systems  
Product Testing Division

Jordan M. Church, B.Tech, Technologist, Ext. 11546  
Technical Manager, Building & Energy Systems  
Product Testing Division

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APPENDIX A

Specimen Bill of Materials and Drawings

(4 Pages)
Bill Of Materials

1. Alpolic 4 mm SMX silver metallic panels, fabricated with rout and return
2. Px-10 perimeter extrusion
3. #8 aluminum blind rivet
4. Installation clip aluminum
5. #8 pan head tek screw stainless steel
6. 16 gauge galvanized furring channel stiffeners
7. Tremco™ Spectrum 2 sealant
8. 1" galvanized z-girt 16 gauge
9. #10 pan head 1 1/2" stainless tek screw
10. #12 hex head 2" plated tek screw
11. 4mm spline
12. 0.040 aluminum sill
13. 1" Foam backer rod
Test Backup Wall Construction:

Units Presented are in Inches
Test Specimen Details (Provided by ACM Panelworx):

[Diagram of test specimen with dimensions and labels]
Test Specimen Details (Provided by ACM Panelworx):
APPENDIX B

Specimen Construction Photographs

(2 Pages)
Figure B1 – Backup Wall Framing and Plexiglas Installation

Figure B2 – Lower Panel Installation
(Installation by ACM Panelworx)
Figure B3 – Completed Wall (Installation by ACM Panelworx)

Figure B4- Set up for Wall Pressurization and Static Water Pressure Resistance
APPENDIX C

AAMA 501.1-05 Photographs (Dynamic Pressure Test)

(2 Pages)
Figure C1 - Specimen Set up in front of viewing chamber

Figure C2 - Spray rack Set up for water penetration
Figure C3 - Wind Machine setup to simulate Dynamic Pressure (AAMA 501.1-05)
REPORT NUMBER: 3117763TOR-002
ORIGNAL ISSUE DATE: March 30, 2007

EVALUATION CENTER
Intertek Testing Services NA Ltd.
3210 American Drive
Mississauga, ON L4V 1B3

RENDERED TO
Attn: Tim Mrkalj
ACMpanelworx
357 Croft Drive
Lakeshore, ON N8N 2L9

PRODUCT EVALUATED: Exterior Aluminum Composite Panel Cladding System
EVALUATION PROPERTY: Air Leakage, Water Penetration and Structural Performance

Report of Testing Exterior Aluminum Composite Panel Cladding System, for compliance with the applicable requirements of the following criteria:
- ASTM E331-00, "Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference"

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1 Table of Contents

1 Table of Contents..........................................................................................................................2
2 Introduction..................................................................................................................................3
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   6.3 Wind Load Resistance ............................................................................................................7
7 Appendix A – Drawings .................................................................................................................9
2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for ACMpanelworx on March 27, 2007. This report covers air leakage, water penetration and structural performance, testing carried out on a 6' by 6' composite aluminum wall cladding assembly. The specimen was received and submitted for testing at Intertek on March 15, 2007. Testing was performed in basic accordance with the following standards:


3 Sample Description

Designation: 6 x 6 Composite Aluminum Wall Cladding System

Manufacturer: D&M Glass & Mirror Ltd.

Condition: New and undamaged.

Description: The system is comprised of four individual composite architectural sandwich panels each consisting of an ALPOLIC® 4 mm aluminum composite panel covering 3" thick Roxul® mineral wool insulation and fastened by #10 x 1-1/2” self-tapping screws to “Blueskin®” membrane covered with 1/2” plywood. The opposite side of the assembly consisted of 1/2” gypsum board. Top, bottom and sides were covered by 2” x 10” wood block and sealed with caulking.

Drawings: D&M Glass and Mirror – front view
D&M Glass and Mirror – cross-sectional view 1, 2, 3
D&M Glass and Mirror – cross-sectional view 4, 5

Deviations from Drawings Exterior panel (covered by Blueskin® membrane) is 5/8’ thick plywood, not 5/8” drywall as indicated by drawing
ALPOLIC® aluminum panel encapsulates 3” thick layer of mineral wool insulation, not rigid insulation as indicated by drawing.
4 Testing and Evaluation Methods

4.1. AIR TIGHTNESS TESTS

The Air Tightness test (Air Infiltration and Air Exfiltration) was conducted in accordance with ASTM E283-04, "Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differential Across the Specimen". The Air Infiltration/Exfiltration tests were performed using test pressures of 75 Pa (1.57 psf) and 300 Pa (6.27 psf). An average air leakage rate was calculated at each pressure differential setting.

4.2. WATER TIGHTNESS TEST

The Water Tightness test was conducted in accordance with ASTM E331-00, "Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference"

The Water Tightness test was performed at two pressure differentials (137 Pa and 700 Pa) and a water spray rate of at least 204 L/m² per hour (5.0 U.S. gal/ft² per hour) applied continuously for 15 minutes.

4.3. WIND LOAD RESISTANCE TESTS

4.3.1 Deflection Test

The Wind Load Resistance Deflection test was conducted in accordance with ASTM E330-02, "Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference"

The Deflection test was performed in both the positive and negative directions at various increasing pressure levels. After a 10 second preload (50% of the test load), followed by 1 minute with the pressure released, the test was conducted at the specified test pressure for a period of 10 seconds. Deflection measurements were taken at the mid-span and ends of the wall assembly. After the test loads were released, the wall system was inspected for failure or permanent deformation of any part of the wall system that would cause any operational malfunction. The client requested a specification of L/180 for the deflection limit of the wall panel.
5 Test Apparatus

The test equipment used for the window system described in this report was as shown in the following table:

<table>
<thead>
<tr>
<th>Test</th>
<th>Application</th>
<th>Equipment</th>
<th>Intertek ID#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Leakage Resistance</td>
<td>To develop the test pressures</td>
<td>Air blower</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>To measure the volume of air passing through</td>
<td>Meriam Instrument Co. laminar flow element,</td>
<td>280-01-0573</td>
</tr>
<tr>
<td></td>
<td>the test sample</td>
<td>Model No. 50MW20-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To measure the chamber pressure</td>
<td>Dwyer 0-0.5° H₂O manometer</td>
<td>280-01-0723</td>
</tr>
<tr>
<td>Water Penetration Resistance</td>
<td>To develop the test pressures</td>
<td>Air blower</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>To measure the pressures</td>
<td>Dwyer 0-4° H₂O manometer</td>
<td>280-02-0080</td>
</tr>
<tr>
<td></td>
<td>To deliver the water on the test sample</td>
<td>Water spray assembly</td>
<td>280-01-0154</td>
</tr>
<tr>
<td>Wind Load Resistance</td>
<td>To develop the test pressures</td>
<td>Air blower</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>To measure the pressures</td>
<td>Dwyer 0-30° H₂O manometer</td>
<td>280-01-0628</td>
</tr>
<tr>
<td></td>
<td>To measure deflection</td>
<td>Digital deflection gauge</td>
<td>280-01-0653</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>280-01-0654</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>280-01-0655</td>
</tr>
</tbody>
</table>
6 Testing and Evaluation Results

6.1 Air Leakage Test
ASTM E283-04

**Air Infiltration – 75 Pa (1.57 psf)**
Corrected infiltration: \(< 0.17 \text{ m}^3/\text{hr} ( < 0.10 \text{ cfm})\)
Wall Panel Area: \(3.34 \text{ m}^2 (36.0 \text{ ft}^2)\)
Infiltration rate: \(< 0.05 \text{ m}^3/\text{hr/m}^2 ( < 0.003 \text{ cfm/ft}^2)\)

**Air Exfiltration – 75 Pa (1.57 psf)**
Corrected exfiltration: \(< 0.17 \text{ m}^3/\text{hr} ( < 0.10 \text{ cfm})\)
Wall Panel Area: \(3.34 \text{ m}^2 (36.0 \text{ ft}^2)\)
Exfiltration rate: \(< 0.05 \text{ m}^3/\text{hr/m}^2 ( < 0.003 \text{ cfm/ft}^2)\)

**Average air leakage rate:** \(< 0.05 \text{ m}^3/\text{hr/m}^2 ( < 0.003 \text{ cfm/ft}^2)\)

**Air Infiltration – 300 Pa (6.27 psf)**
Corrected infiltration: \(< 0.17 \text{ m}^3/\text{hr} ( < 0.10 \text{ cfm})\)
Wall Panel Area: \(3.34 \text{ m}^2 (36.0 \text{ ft}^2)\)
Infiltration rate: \(< 0.05 \text{ m}^3/\text{hr/m}^2 ( < 0.003 \text{ cfm/ft}^2)\)

**Air Exfiltration – 300 Pa (6.27 psf)**
Corrected exfiltration: \(< 0.17 \text{ m}^3/\text{hr} ( < 0.10 \text{ cfm})\)
Wall Panel Area: \(3.34 \text{ m}^2 (36.0 \text{ ft}^2)\)
Exfiltration rate: \(< 0.05 \text{ m}^3/\text{hr/m}^2 ( < 0.003 \text{ cfm/ft}^2)\)

**Average air leakage rate:** \(< 0.05 \text{ m}^3/\text{hr/m}^2 ( < 0.003 \text{ cfm/ft}^2)\)
6.2. Water Penetration Test
ASTM E331-00

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Pressure Differential</th>
<th>Test Time</th>
<th>Result</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>137 Pa (2.86 psf)</td>
<td>15 minutes</td>
<td>Fail</td>
<td>Leak through pinholes in Blueskin® sheathing where screws had been holding the z-bar, but then were removed</td>
</tr>
<tr>
<td>2</td>
<td>137 Pa (2.86 psf)</td>
<td>15 minutes</td>
<td>Pass</td>
<td>Put caulking over 4 pinholes in Blueskin® sheathing where screws had been holding the z-bar</td>
</tr>
<tr>
<td>3</td>
<td>700 Pa (14.6 psf)</td>
<td>15 minutes</td>
<td>Pass</td>
<td></td>
</tr>
</tbody>
</table>

6.3. Wind Load Resistance
ASTM E330-02

Deflection Tests

1
Panel Span
Span length: 845 mm (33-1/4")
Test pressure: +960 Pa (+20.1 psf) -960 Pa (-20.1 psf)
Net deflection (at midspan): 0.00 mm (0.000") 0.00 mm (0.000")
Allowable deflection (L/180): 4.80 mm (0.189") 4.80 mm (0.189")

2
Centre Span
Span length: 1743 mm (68-5/8")
Test pressure: +960 Pa (+20.1 psf) -960 Pa (-20.1 psf)
Residual Deflection: 0.09 mm (0.004") -0.00 mm (-0.001")
Maximum Net Deflection: 0.52 mm (0.021") 0.48 mm (0.019")
Allowable deflection (L/180): 9.68 mm (0.381") 9.68 mm (0.381")

3
Centre Span
Span length: 1743 mm (68-5/8")
Test pressure: +2160 Pa (+45.1 psf) -2160 Pa (-45.1 psf)
Residual Deflection: 0.08 mm (0.003") 0.14 mm (0.006")
Maximum Net Deflection: 1.28 mm (0.050") 1.71 mm (0.067")
Allowable deflection (L/180): 9.68 mm (0.381")

4  Centre Span
Span length: 1743 mm (68-5/8")
Test pressure: +3600 Pa (+75.2 psf) -3600 Pa (-75.2 psf)
Residual Deflection: 0.14 mm (0.005") 0.22 mm (0.008")
Maximum Net Deflection: 2.36 mm (0.093") 3.55 mm (0.140")
Allowable deflection (L/180): 9.68 mm (0.381") 9.68 mm (0.381")

5  Centre Span
Span length: 1743 mm (68-5/8")
Test pressure: +6120 Pa (+127.8 psf) -6120 Pa (-127.8 psf)
Residual Deflection: 0.26 mm (0.010") 1.15 mm (0.045")
Maximum Net Deflection: 5.27 mm (0.208") 8.22 mm (0.324")
Allowable deflection (L/180): 9.68 mm (0.381") 9.68 mm (0.381")

6  Centre Span
Span length: 1743 mm (68-5/8")
Test pressure: +8000 Pa (+167.1 psf) -8000 Pa (-167.1 psf)
Residual Deflection: 0.32 mm (0.012") 1.41 mm (0.056")
Maximum Net Deflection: 6.09 mm (0.240") 11.78 mm (0.464")*
Allowable deflection (L/180): 9.68 mm (0.381") 9.68 mm (0.381")*

* Exceeded the L/180 deflection limit

Tested by: Claudio Sacilotto

INTERTEK TESTING SERVICES NA LTD.

Reported by:  
D.J. Carter, P. Eng.
Building Products Engineer

Reviewed by:  
Vern W. Jones, CET
Manager, Physical Testing Services

DJC/VWJ/cs
7 Appendix A – Drawings

(Drawings – 3 Pages)
EVO
Specifications
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] [wet-seal] [dry-seal] panels.

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

.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.

SPEC NOTE: Re 101.3. Items listed are available at extra cost and not included with basic panel package.

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


1.04 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.

Approved EVO™ Manufacturer: ACMpanelworx (visit evopanels.com for full list)

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 Pa¹ (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.

1.08 **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

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.

<table>
<thead>
<tr>
<th>Product Summary</th>
<th>Total Content (100% post + 50% Pre)</th>
<th>LEED Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3mm PE</td>
<td>37%</td>
<td>2 points</td>
</tr>
<tr>
<td>4mm PE</td>
<td>35%</td>
<td>2 points</td>
</tr>
<tr>
<td>4mm FR</td>
<td>17.3%</td>
<td>1 point</td>
</tr>
<tr>
<td>6mm PE</td>
<td>32.5%</td>
<td>2 points</td>
</tr>
</tbody>
</table>

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

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 (Licensee name)[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:


      2. Aluminum Extrusions: Mill finish (6061-T6)

2.03 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 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].
PART 3 – EXECUTION

3.01 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.

3.02 PREPARATION

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

3.03 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.

3.04 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.

3.05 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.

3.06 CLEANING

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

3.07 WASTE MANAGEMENT

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

3.08 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
SECTION 07 42 43

EVOMAXci™ ALUMINUM COMPOSITE METAL (ACM)
WALL PANEL SPECIFICATION with PRODUCT DETAILS

**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] [wet-seal] [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


1.04 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.

Visit www.evopanels.com for information on approved fabricators.
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 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, 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 Pa¹ (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**

<table>
<thead>
<tr>
<th>Pressure (Pa)</th>
<th>Test Pressure (lbs/ft²)</th>
<th>Flow Rate (L/s m²)</th>
<th>(CFM/ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>1.57</td>
<td>0.05</td>
<td>0.01</td>
</tr>
<tr>
<td>300</td>
<td>6.24</td>
<td>0.05</td>
<td>0.01</td>
</tr>
</tbody>
</table>

.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.

.1 EVO™ Rivetless 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.

### 1.08 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 G155-13 (Solar & Weathering)
ASTM D1654 (Corrosion Creepback)

**FIRE TEST METHOD**

**NFPA 285**

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 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. 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

larson® by Alucoil® material manufactured by Alucoil North America, LLC. 1976 Joe Rogers Jr. Blvd, Manning, SC 29102 USA (803)-505-6543

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.

<table>
<thead>
<tr>
<th>Product Summary</th>
<th>Total Content (100% post + 50% Pre)</th>
<th>LEED Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>4mm PE</td>
<td>35%</td>
<td>2 points</td>
</tr>
<tr>
<td>4mm FR</td>
<td>17.3%</td>
<td>1 point</td>
</tr>
<tr>
<td>6mm PE</td>
<td>32.5%</td>
<td>2 points</td>
</tr>
</tbody>
</table>

.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 larson® by Alucoil ACM Panels: Provide manufacturer’s standard [5 year] [10 year] warranty against panel integrity.

.2 Finish Coating Performance: Provide manufacturer’s standard [10, 20, 30 year] warranty against fading, color change, chalking, peeling, cracking, or delaminating of the coating system.

PART 2 – PRODUCTS

2.01 MANUFACTURERS
.1 Aluminum composite metal panels to be obtained as single source from approved manufacturer. Visit [www.evopanels.com](http://www.evopanels.com) to locate Licensee in your region.

.2 Composite Panels

.1 larson® by Alucoil® material manufactured by Alucoil North America, LLC. 1976 Joe Rogers Jr. Blvd, Manning, SC 29102 USA (803-505-6543

.2 Aluminum Face Sheets:

.1 Thickness: 0.50mm (0.020") (nominal)

.2 Alloy: AA3000 or AA5000 Series (Painted material)

.3 Panel Thickness and Weight:

.1 [4mm (0.157")]: 1.12 lbs./ft²  [6mm (0.236")]: 1.50 lbs./ft²

.4 Core: (PE) or (FR)

.5 Product Performance

.1 Bond Integrity

When tested for bond integrity, in accordance with ASTM D1781 (simulating resistance to panel delamination), there shall be no adhesive failure of the bond a) between the core and the skin nor b) cohesive failure of the core itself below the following values:

.2 Peel Strength:

Greater than 100 N-mm/mm (22.5 in-lb/in) as manufactured

Greater than 100 N-mm/mm (22.5 in-lb/in) after 21 days soaking in water at 70°F

.6 Fire Performance

.1 ASTM E 84: Flame Spread = "Passed Class A"

.2 Smoke Developed = “Passed Class A”

.3 NFPA 285 Tested EVO™/larson® Assembly: FR Core Only

2.02 MATERIALS

*SPEC NOTE: Delete items not required.*

.1 ACM Wall Panel Systems

.1 EVO™ Architectural Panels by (Licensee name)[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] or approved alternate.

.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: EVO™ Rivetless extrusions (patent pending), Mill finish (6061-T6).

2.03 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 retardant, 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.

.1 Fabrication Method: Prepare EVO™ Rivetless extrusions (patent pending) for securing to ACM panel in accordance with manufacturer’s written instructions and in accordance with AAMA 508-07.

.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 406mm (16”) minimum to 610mm (24”) maximum centers, to comply with 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 Industries, Valspar, Akzo Nobel, Duracoat (PVdF) fluoropolymer containing 70% Kynar 500/Hylar 5000 resins to AAMA 620, select from color offerings [_____ color].


3 EVOWood / larson® Wood (PVdf) fluoropolymer containing 70% Kynar 500/Hylar 5000 resins to AAMA 620, [_____ color].

4 EVOExotic / larson® Specials - PVDF or HDP High Durable Polyester finishes; MCM natural metals [ElZinc, Stainless Steel, Copper, Brass, Brushed Aluminum].

PART 3 – EXECUTION

3.01 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.

3.02 PREPARATION

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

3.03 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.

3.04 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.

3.05 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.

3.06 CLEANING

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

3.07 WASTE MANAGEMENT

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

3.08 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
100% CONCEALED FASTENERS

ARCHITECTURAL PANEL TYPE

EVO™ RIVETLESS™
Innovative – Patent Pending
Free of exposed fasteners
NO RIVETS = Elegant appearance
Superior Structural performance
Standardized System by design
Coast-2-Coast Mfg consistency
Available thru US & CDN partners
NFPA286 tested with EVDOMAXel™
EVO™ Integrated Stiffener
Value Engineered, various finishes
EVOWOOD/EVOSTONE/EVOEXOTIC
Matched look = less load and Save
Able to replace individual panels
Panels are deliverable to site faster.

RIVETTED (OTHERS)
Status Quo
Unsightly screws and rivets
Color match screws and rivets
No manufacturing consistency between fabricators.

A PARADIGM SHIFT IN THE MAKING

Our objective is to establish the EVO™ RIVETLESS™ panel system as the highest standard of ACM panels, anywhere.

EVO’s™ elegant appearance offers superior Value and Performance to any type of façade, simple or complex.

EVO’s™ Exclusive Manufacturer’s Network in North America ensures Quality Assurance in production and installation procedures, attainable through our standardized system design. Architects, Developers and decision-makers will appreciate excellence in our planning, execution, delivery and service follow thru, as being a signature of our Network.

The EVO™ Network provides a collaborative resource between manufacturer’s to complete projects on-time, discuss innovations, remain competitively positioned with broad appeal in N. America and confidently be the leaders within their industry, year-after-year.

Future testing for compliance to: CAN/ULC S134-13, Miami-Dade HVHZ tests and others, will continue to position EVO™ RIVETLESS™ at the forefront of innovative solutions.

TESTED + CERTIFIED
Reaching New Heights with these Professionals

ASHRAE
Intertek
AAMA
International Standards Association
Exova
RAINSCREEN TESTING

AAMA 508 - 07 COMPLIANT
Voluntary Test Method and Specification for Pressure Equalized
Rain Screen Wall Cladding Systems

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)

EVO STONE PERFORMANCE

Evaluation of EVO STONE 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)
ASTM G155-13 (Solar & Weathering)

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

MATERIAL SIZE AVAILABILITY

PE & FR core options with sheet material sizes

W 50" | 62" | up to 196" | T 4mm | 6mm

EVO™ Architectural Panel System (U.S. Pat. Pending)
CHANGING THE STANDARD BY DESIGN

GUIDING PRINCIPLES BEHIND OUR EVO™ RIVETLESS™ SYSTEM

“Design is not what it looks like and feels like. Design is how it works.”

STEVE JOBS

“Companies that do not practice Smart Lean Manufacturing are doomed to mediocrity & ultimately failure.”

J. LIKER

“Good design is nothing less than the translation of functional specifications. When it expresses & supports functionality, design becomes a selling point.”

EUGEN GASSMANN

“For you to sleep well at night, the aesthetic, the quality, has to be carried all the way through.”

STEVE JOBS

Time savings through implementing Lean Manufacturing practices can result in: cost savings, cost avoidance, and indirect savings, benefiting project outcome measurably.

ACM Panelworx Inc.
Aluminum Composite Panels

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Toll free: 1 866 501 9744
Fax: (519) 739 1609
Email: sales@acmpanelworx.com
Website: www.acmpanelworx.com