



Copyright 2016 Lenmak Exterior Innovations Inc.

## **Part 1      General**

### **1.1          SUMMARY**

- .1      \*\*\*\* This Section includes requirements for supply and installation of exterior factory fabricated and prefinished metal wall panels [and soffit panel assemblies] with related flashings and accessory components [and support framing].

### **1.2          RELATED REQUIREMENTS**

- .1      \*\*\*\* [Section 05 41 00 - Structural Metal Stud Framing: Steel stud wall framing]
- .2      \*\*\*\* [Section 06 10 00 – Rough Carpentry: Wood framed exterior walls]
- .3      \*\*\*\* [Section 07 21 16 - Blanket Insulation: Semi-rigid insulation installed between metal panels and exterior sheathing]
- .4      \*\*\*\* [Section 07 26 00 - Vapour Retarders: Perimeter vapour seal between [curtain wall] system and adjacent assemblies]
- .5      \*\*\*\* [Section 07 27 00 - Air Barriers]: Perimeter air seal between [curtain wall] system and adjacent assemblies
- .6      Section 07 92 00 - Joint Sealants

### **1.3          REFERENCE STANDARDS**

- .1      American Architectural Manufacturers Association (AAMA):
  - .1      \*\*\*\* [AAMA 2605-13 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels]
- .2      American Society for Testing and Materials (ASTM):
  - .1      \*\*\*\* [ASTM B209/B209M-14 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate]

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- .1 \*\*\*\* Coordination: Coordinate work of other trades having a direct bearing on work of this Section in accordance with Section [01 31 00], and as follows:
  - .1 \*\*\*\* Coordinate installation of [air barrier] [and] [vapour retarder].
  - .2 \*\*\*\* Coordinate installation of [windows] [doors] [louvres] and other components penetrating metal panel assemblies.
- .2 \*\*\*\* Pre-Installation Meeting: Before starting work of this Section, arrange a meeting in accordance with Section [01 31 19], with Contractor, panel Subcontractor, Subcontractors responsible for adjacent work, and Subcontractors responsible for work that penetrates panel assemblies.
  - .1 Review construction schedule, material availability, personnel, equipment, and other relevant issues to avoid unnecessary delays.
  - .2 Review methods and procedures related to panel installation, including manufacturer's instructions.

#### 1.5 SUBMITTALS

- .1 Submit information in accordance with Section 01 33 00 - Submission Procedures.
- .2 Action Submittals: Before starting work of this Section, submit the following:
  - .1 Shop Drawings: Indicate arrangement of panel system, include dimensions, location of joints, profiles of panels, support types and locations, sealants, fasteners, flashings, closures and all metal components related to panel installation.
  - .2 Samples:
    - .1 \*\*\*\* [Samples for Initial Selection: Submit [color chart] [physical samples on actual substrate] showing manufacturer's full range of standard colors for Consultant's selection.]
    - .2 Samples for Verification: When requested by the Consultant, submit sample in manufacturer's standard size for each panel illustrating colour, finish and texture.
- .3 Informational Submittals:
  - .1 Installation Data: Before beginning work of this Section, submit manufacturer's installation instructions, and any special handling criteria.
  - .2 Test Reports: When requested by Consultant, submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .4 \*\*\*\* Sustainable Design Submittals: Submit project sustainable design requirements with Section [01 35 18] [01 35 63], and as follows:
  - .1 \*\*\*\* During the course of the work, submit manufacturer's documentation indicating [percentages weight of post-consumer and pre-consumer recycled content, total weight of products and costs for each product with recycled content] [and local/regional materials].

- .5 Closeout Submittals:
  - .1 \*\*\*\* Operations and Maintenance Data: Submit maintenance data for cleaning and maintenance of panel finishes for incorporation into Operation and Maintenance manuals specified in Section [01 78 10] [01 78 23].
  - .2 Warranty Documentation: Submit manufacturer's finish warranty information.

## 1.6 QUALITY ASSURANCE

- .1 \*\*\*\* Manufacturer Qualifications:
  - .1 Company specializing in manufacturing the Products specified in this Section with minimum [three (3)] years' experience.
  - .2 Provide panel assemblies and accessories from a single manufacturer.
- .2 \*\*\*\* Installer Qualifications: Company specializing in performing the work of this Section with minimum [three (3)] years documented experience [and acceptable to the manufacturer].
- .3 \*\*\*\* Mock-Ups: Provide mock-up in accordance with Section [01 43 00] [01 45 00], [[\_\_\_\_\_] m [\_\_\_\_\_] ft] long by [[\_\_\_\_\_] m [\_\_\_\_\_] ft.] wide mock-up of panel [and soffit system], attachments to building [frame], associated vapour retarder and air barrier materials, weep drainage system, sealants and seals, and related insulation.
  - .1 \*\*\*\* Locate [where jointly agreed between Consultant and Contractor] [where directed by Consultant].
  - .2 Approved mock-up may remain as part of the Work.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Transport, handle, store, and protect Products in accordance with Section 01 61 00, and as follows:
  - .1 Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
  - .2 Store prefinished material off ground protected from weather, to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
  - .3 Prevent contact with materials which may cause discolouration or staining.

## 1.8 WARRANTY

- .1 \*\*\*\* Provide a warranty to include coverage for failure of finish to meet specified requirements, including peeling, cracking, checking, blistering, chipping and excessive colour fading caused by exposure to weather:
  - .1 \*\*\*\* [Twenty-five (25) year for PVDF 12,000 series finishes]
  - .2 \*\*\*\* [Twenty (20) year for PVDF painted aluminum, depending on colour]
  - .3 \*\*\*\* [Forty (40) year for NaturClad™ PVDF painted steel]

## Part 2 Products

### 2.1 MANUFACTURERS

- .1 Basis-of-Design Materials: Products named in this Section were used as the basis-of-design for the Project.
  - .1 \*\*\*\* [Additional manufacturers offering similar Products may be incorporated into the work of this Section when they meet the performance requirements established by the named Products, and when substitution requests are submitted in accordance with [01 25 00] [01 62 00].]
  - .2 \*\*\*\* [Substitutions: Not permitted]
- .2 Basis-of-Design Materials: Lenmak Exterior Innovations Inc., StrataClad™ series panels

### 2.2 DESCRIPTION

- .1 \*\*\*\* Wall System: Preformed and prefinished single skin metal panel panels, stiffened with factory insulated foam; fastened to [steel] [wood] framing system with concealed fastening, rear ventilated [and sub-girt system].
- .2 \*\*\*\* [Soffit System: Preformed and prefinished single skin profiled metal panels; fastened to [steel] [wood] framing system with concealed fastening system.]

### 2.3 PERFORMANCE CRITERIA

- .1 \*\*\*\* Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall [as calculated in accordance with the applicable building code at the Place of the Work] [to a design pressure of [\_\_\_\_\_] kPa [\_\_\_\_\_] lb/sq ft].
- .2 \*\*\*\* Maximum Allowable Deflection of Aluminum Panel: L/60 of span.
- .3 \*\*\*\* Thermal Movement: Design assemblies for expansion and contraction within system components caused by a cycling ambient temperature range of [-40 to +35] degrees Celsius seasonally without overstressing components causing buckling, failure of connections, or other permanent detrimental effects.
- .4 Provide expansion joints to accommodate movement within metal panels, and between metal panels and structure to prevent permanent distortion or damage to metal panels.
- .5 Seismic Loads: Design and size components to withstand seismic loads and sway displacement as calculated in accordance with applicable building code at the Place of the Work.
- .6 \*\*\*\* System Drainage and Ventilation: Provide assemblies with positive drainage to exterior when moisture enters or condensation occurs within metal panel system. Exterior panel assemblies covering an air space [pressure equalized with the exterior].
- .7 \*\*\*\* Vapour Retarder: Provide continuity to the vapour retarder at building envelope, in conjunction with vapour retarders specified in Section [07 26 00].
- .8 \*\*\*\* Air Seal: Provide continuity to the building air barrier systems at building envelope, in conjunction with air seal materials specified in Section [07 27 00].

## 2.4 **\*\*\*\*STEEL SHEET MATERIALS**

- .1 Steel:
  - .1 Galvalume AZ150 (AZ50) to ASTM A792/A792M.
  - .2 \*\*\*\* [0.76 mm (22 ga.) thick for solid colours] \*\*\*\*OR\*\*\*\* [0.61 mm (24 ga.) thick for NaturClad™ finishes]

\*\*\*\*OR\*\*\*\*

## 2.5 **\*\*\*\*ALUMINUM SHEET MATERIALS**

- .1 Aluminum: 3003, 5005, or 5052-H32 to ASTM B209, 1.27 mm (0.050 inch) thick, \*\*\*\* [24.7% pre-consumer and 55.8% post-consumer recycled content]

## 2.6 **COMPONENTS**

- .1 \*\*\*\*Metal Panels: Factory coated [aluminum] [steel], interlocking edges with concealed fasteners.
  - .1 Panel Profile: \*\*\*\* [Width as indicated on Drawings]
  - .2 Panel Depth: \*\*\*\* [38 mm (1 ½")] [Depth as indicated on Drawings]
  - .3 Panel Stiffening Insulation: Pour applied light density open-cell spray polyurethane foam
    - .1 Density: Nominal 12.8 kg/m<sup>3</sup> (0.8 lb/ft<sup>3</sup>).
    - .2 Vapour Permeability: Maximum 1218 ng/Pa.s.m<sup>2</sup> @ 25.4 mm thickness to ASTM E96
    - .3 Flame Spread: 450 maximum, to CAN/ULC-S102
    - .4 \*\*\*\*VOC Emissions: Not measureable, as tested to CAN/ULC-S774
  - .4 Foil-Backed Sheet: Perforated Aluminum, to ASTM C1136, Type II or IV
- .2 \*\*\*\*Soffit Panels: [Matching material and finish of metal wall panels] [Factory coated aluminum], interlocking edges with concealed fasteners
  - .1 \*\*\*\*Panel Profile: [Orientation as indicated on Drawings], [Custom width as indicated on Drawings]
  - .2 \*\*\*\*Panel Depth: [25 mm (1 inch)] [Custom depth as indicated on Drawings]
- .3 Drip Flashing: Manufacturer's standard profile; thickness and finish matching wall panel.
- .4 \*\*\*\*Corner Trim: [Manufacturer's standard profile] [Custom profile as indicated on Drawings], thickness and finish matching wall panel.
- .5 Reveal Trim: Manufacturer's standard profile; thickness and finish matching wall panel.
- .6 Starter Strip: Manufacturer's standard profile; thickness and finish matching wall panel.
- .7 \*\*\*\*Metal Framing: Galvanized steel [18 gauge framing, hat channels, adjustable Z-girts; [gauge as required by engineered design,] [sizes and profiles as indicated on Drawings] [As indicated in Section 05 41 00]

\*\*\*\*OR\*\*\*\*

- .8 \*\*\*\* [Wood Framing: [As indicated in Section 06 10 00] [Framing, furring, strapping; softwood lumber SPF species, [pressure-preservative treated,] sizes and profiles indicated.

## 2.7 FABRICATION

- .1 Form metal profiles true to shape, accurate in size, square, and without distortions.  
.2 Factory fabricate components ready for site installation, in longest practical lengths.

## 2.8 FINISHES

- .1 \*\*\*\* Aluminum Finishes:
- .1 \*\*\*\* [Factory Painted PVDF Coating (Kynar), to AAMA 2605, three-coat, 70 percent by weight fluoropolymer resin]
- .1 \*\*\*\* Colour: [As selected by Consultant from manufacturer's standard colour range]
- \*\*\*\*OR\*\*\*\*
- .2 \*\*\*\* Factory Painted PVDF Metallic Coating: AAMA 2605, three-coat, 70 percent by weight polyvinylidene fluoride (Kynar 500 or Hylar 5000):
- .1 \*\*\*\* Colour: [As selected by Consultant from manufacturer's standard colour range]
- .2 \*\*\*\* Steel Finishes:
- .1 \*\*\*\* Lenmak NaturClad™ Finish: PVDF coating with wood-grain appearance.
- .1 \*\*\*\* Colour: [As selected by Consultant from manufacturer's standard colour range]
- \*\*\*\*OR\*\*\*\*
- .2 Factory Painted PVDF Premium 12,000 series Coating: Two-coat, 70 percent by weight fluoropolymer resin (Hylar 5000 or Kynar 500), 1.0 mil dry film thickness, and as follows:
- .1 Colour: \*\*\*\* [Selected by Consultant from manufacturer's standard colour range]
- \*\*\*\*OR\*\*\*\*
- .3 Factory Painted PVDF Printech Coating: Three-coat, 70% by weight fluoropolymer resin (Hylar 5000 or Kynar 500), and as follows:
- .1 Colour: \*\*\*\* [Selected by Consultant from manufacturer's standard colour range]

## 2.9 ACCESSORIES

- .1 \*\*\*\* Fasteners: [Galvanized] [Long-term corrosion resistant coated steel] [Stainless steel], as recommended by manufacturer
- .2 Escutcheons: Weatherproof type for pipe, conduit, and similar materials penetrating exterior walls
- .3 \*\*\*\* Sealant and Backing Materials: [Polyurethane type] [Silicone type] [As specified in Section 07 92 00].

- .4 Sealant Tape: Self-adhered closed-cell PVC foam tape as recommended by manufacturer.
  - .1 Basis-of-Design Material: Gaska, Tape V7000 Series

## **2.10 SOURCE QUALITY CONTROL**

- .1 Non-Conforming Work: Pre-finished post-formed metal panel assemblies may exhibit certain behaviors common to all fabricators. Panel surfaces may display a slight convex effect (pillowing) due to panel stresses during manufacture, fabrication, or installation. Metal forming during panel fabrication may result fine cracks in finishes (crazing) at outer edges or bends. Take reasonable steps to prevent and mitigate these effects. Excessive effects are a deficiency; mild “pillowing” or “crazing” are not deficiencies.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 \*\*\*\*Verify existing conditions before starting work in accordance with Section [01 70 00] [01 71 00] [01 73 00], and as follows:
  - .1 Verify dimensions, tolerances, and method of attachment with other work.
  - .2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.
  - .3 \*\*\*\*Verify that site measurements are as [indicated on Drawings] [indicated on Shop Drawings] [instructed by the manufacturer].
  - .4 Report unsatisfactory conditions to Consultant in writing; do not start Work until unsatisfactory conditions are corrected.

### **3.2 INSTALLATION**

- .1 \*\*\*\*Install supporting [furring] [framing] [on to cast-in-place concrete substrate] [on to concrete masonry unit substrate] [through exterior gypsum sheathing into structural steel stud framing].
- .2 Install starter flashing, drip and other flashing, corners, edgings, and window and door flashings, and as indicated on Drawings.
- .3 \*\*\*\*Install wall panels [and soffit material] to manufacturer's recommended installation procedures, providing proper laps true to line, and tight fitting to ensure a weather-tight face.
- .4 Install finishing flashing, cap flashing, trims and closures.
- .5 Attach components in manner not restricting thermal movement.
- .6 \*\*\*\*Align assembly plumb and level, free of twist. Maintain assembly dimensional tolerances, [aligning with adjacent work].
- .7 Metal Corrosion Protection: Provide permanent separation material where dissimilar metals contact each other and at corrosive substrates.

- .8 Sealants: Install sealants at junctions with adjoining components described in other specification Sections, and where shown on Drawings, in accordance with Section 07 92 00. Do not install sealants in locations that will interfere with drainage of pressure-equalized assembly.
- .9 Remove site cuttings from surfaces without damaging finishes.
- .10 Repair and touch up very minor surface damage with colour-matching high quality paint recommended by manufacturer.
- .11 Replace damaged materials that cannot be satisfactorily repaired.
- .12 \*\*\*\*Tolerances: Install assemblies in accordance with Section [01 73 00], and as follows:
  - .1 \*\*\*\*Maximum Offset from Alignment between Adjacent Members Butting or In-Line: [1.6 mm (1/16 inch)]
  - .2 \*\*\*\*Maximum Variation from Plane: [6 mm (1/4 inch)]

### 3.3 CLEANING

- .1 \*\*\*\*Perform general cleaning requirements for installed work in accordance with Section [01 74 00] [01 74 23], and as follows:
  - .1 Clear weep holes and drainage pathways of obstructions, dirt, and sealants.
  - .2 If metal panels show evidence of soiling, clean and wash visible surfaces with mild soap and water. Rinse with clean water.

**END OF SECTION**