

Silhouette

Sheer Brilliance

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Stainless Steel Silhouette Panel

Silhouette by Lenmak Exterior Innovations Inc. is a window to your imagination. 2-D and 3-D modeling technology allow us to perfectly illustrate repeating geometric patterns or full scenes using a variety of perforated shapes. Soft diffused light, reflective metallics, and vivid colours offer near-limitless design opportunities, while in-house design, local manufacturing, and environmentally-sensitive business practices bring make your vision possible. Panels and trim are made-to-measure from a variety of materials for a perfect fit every time.

Advantages

Design

- 2-D and 3-D in-house design let us model a variety of patterns using a series of standard tool shapes
- Send us full scenes as 2D or 3D models - we can apply your design to site-measured panel layouts for seamless integration of design vision and functional elements

Colour

- Traditional metallics like brushed stainless steel or anodized aluminum create a beautiful canvas for back-lit scenes
- Durable powder-coated finishes in 185 colours
- Custom coordinating trim manufactured in-house for a perfect fit and colour match

Time

- Lean manufacturing and a dedicated Special Projects team enable custom orders to be produced quickly
- Short lead times and manufacturing flexibility reduce carrying costs and site delays
- In-house layout service offers extra agility during approval process and available 3-D modeling prevents delays due to sizing inconsistency

Price

- Fully automated material retrieval system, punching, bending, and tagging allow efficient production of even the most complex details with minimal supervision
- Minimize equipment rental and carrying costs with fast lead times due to lean manufacturing practices
- Prevent delays and installation costs through the manufacturing of perfect-fit panels using BIM modeling

Sustainability

- Panels include pre- and post-consumer recycled materials (possible LEED credits) and remain 100% recyclable at the end of their life cycle
- No harmful toxins and zero VOC emissions ensure interior air quality and reduce carbon footprint
- Customized design produced on demand minimizes waste and conserves energy





metallic | 38/90016
Argento 312



metallic | 38/90011
Argento 308



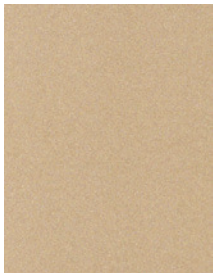
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Argento 307



metallic | 38/90007
Argento 305



metallic | 38/90003
Argento 301



metallic | 38/20013
Deore 301



metallic | 38/15021
Champagne 304



metallic | 38/15020
Champagne 303



metallic | 38/15018
Champagne 302



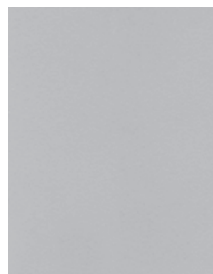
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Champagne 301



metallic | 38/50035
Seafoam Green



metallic | 38/90010
Marine Silver One Coat



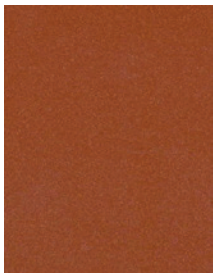
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Anodized Silver



metallic | 38/99999 **NEW**
Bengal Silver ***



metallic | 38/90080 **NEW**
Brilliant Sparkle Silver
** | ***



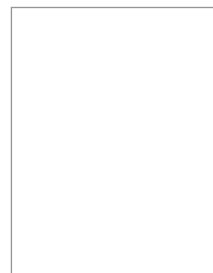
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Pearl Copper



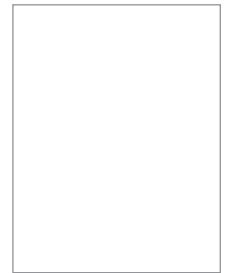
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Pearl Night Blue



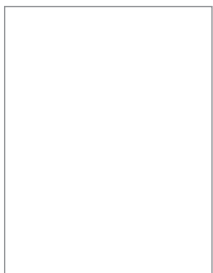
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Pearl Dark Grey



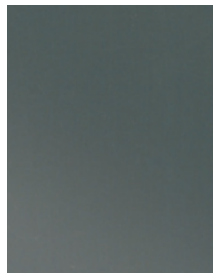
clear | 38/00088 **NEW**
Clear Matte ❖
gloss level 10±5



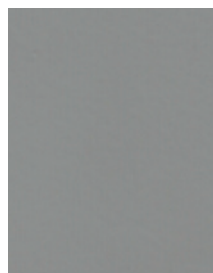
clear | 38/00001
Clear Glossy ❖
gloss level 85+



fine texture 📌
all colors can be custom-
made in this finish



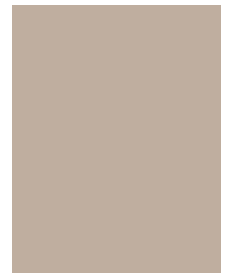
primer
69/90500 (USA and Mexico)
69/90701 (Canada)
Zinc-Rich Primer | gloss level 70±5



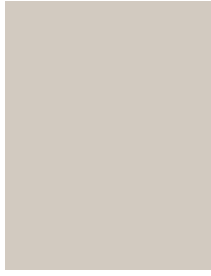
primer | 69/70000
Dryprotector
gloss level 3±2



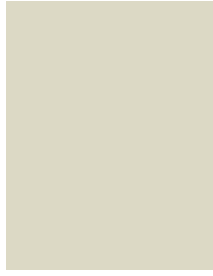
primer | 09/73841
OGF
gloss level 70±5



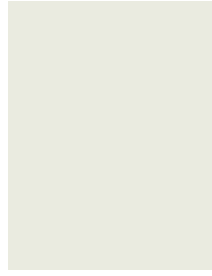
satin | 38/15002
Sierra Tan ***
gloss level 30±5



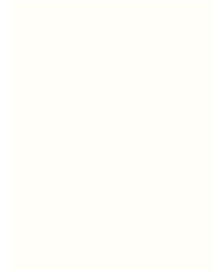
satin | 38/15012
Sandstone ***
gloss level 30±5



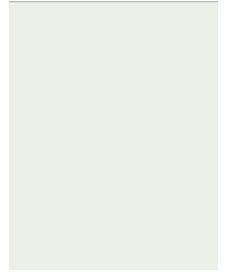
satin | 38/15003
Almond ***
gloss level 30±5



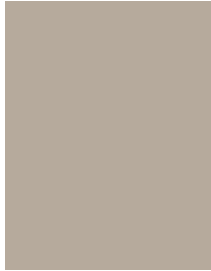
satin | 38/10070
Bone White ***
gloss level 30±5



satin | 38/10130
Seashell White ***
gloss level 30±5



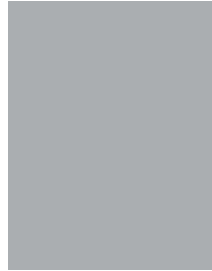
semi matte | 38/11401 **NEW**
Pompano White ***
gloss level 45±5



satin | 38/70070
Taupe ***
gloss level 30±5



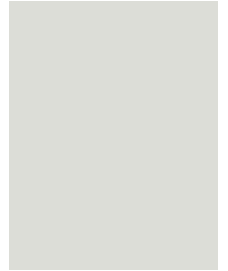
satin | 38/70019
Slate Grey
gloss level 30±5



satin | 38/70049
Grey
gloss level 30±5



satin | 38/70025
Ash Grey
gloss level 30±5



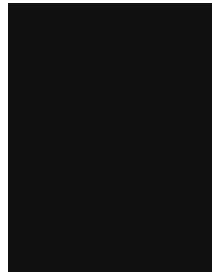
satin | 38/70048
Sky Grey
gloss level 30±5



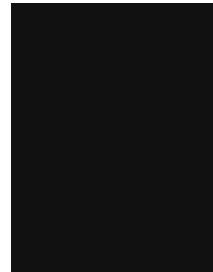
matte | 38/40025
Interstate Blue
gloss level 20±5



satin | 38/40051
Military Blue
gloss level 25±5



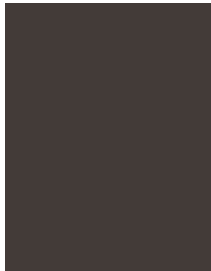
semi gloss | 38/81009
Railing Black
gloss level 60±5



satin | 38/80020
Jet Black
gloss level 30±5



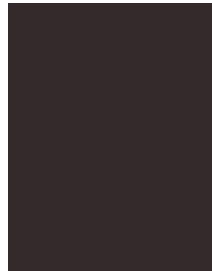
satin | 38/60018
Koko Brown
gloss level 30±5



satin | 38/60080
Statuary Bronze
gloss level 30±5



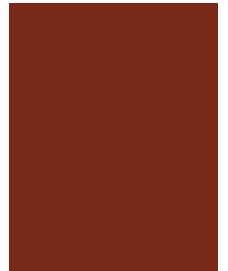
satin | 38/60014
Medium Bronze
gloss level 30±5



matte | 38/60090
Dark Anodized Bronze
gloss level 20±5



satin | 38/30041
Redwood
gloss level 30±5



matte | 38/30028
Brick Red
gloss level 20±5



matte | 38/30033
Boysenberry
gloss level 20±5



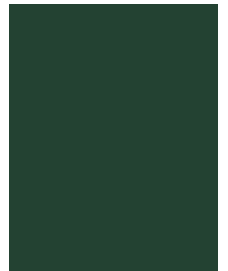
matte | 38/60006
Aged Copper
gloss level 20±5



satin | 38/50080
Ivy Green
gloss level 30±5



satin | 38/50037
Classic Green
gloss level 30±5



satin | 38/50110
Hartford Green
gloss level 30±5

™

Special Order Colour Guide



RAL 6034*



RAL 6033*



RAL 5007*



RAL 5017*



RAL 5013*



RAL 5011*



RAL 6021*



RAL 6018*



Deer Green



RAL 6001*



RAL 6028*



RAL 6004*



RAL 7033*



RAL 7002*



RAL 6013*



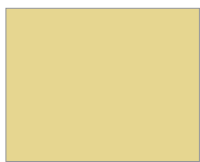
RAL 7023*



RAL 6005*



RAL 6012*



RAL 1015*



RAL 1001*



RAL 1019*



RAL 7006*



Sunflower



Deer Yellow



Safety Orange



RAL 8004*



RAL 8008*



RAL 8011*



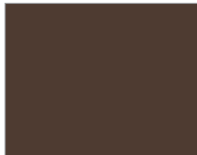
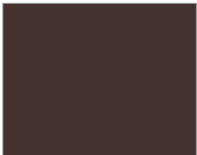
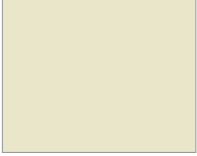
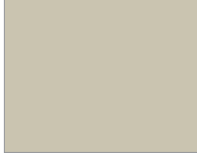
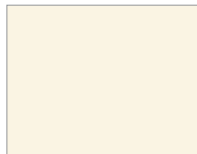
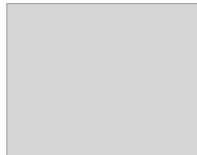
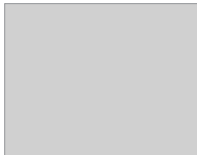
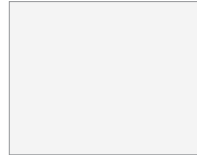
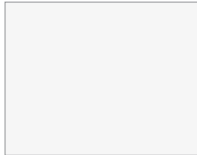
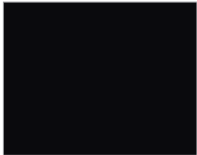
RAL 8014*



RAL 9004*

*Denotes colours that are made to order. Lead time is 3-4 weeks.

Flawless from Fabrication to Finish

					
RAL 8025*	RAL 8028*	RAL 8017*	RAL 8019*	RAL 7022*	RAL 7021*
					
RAL 7037*	RAL 7039*	RAL 7005*	RAL 7012*	RAL 7013*	RAL 6009*
					
RAL 1013*	RAL 7044*	RAL 7004*	RAL 7042*	RAL 7030*	RAL 7043*
					
RAL 9001*	RAL 9002*	RAL 7038*	RAL 7045*	RAL 7024*	RAL 7031*
					
RAL 7035	RAL 7047*	RAL 7040*	RAL 7010*	RAL 7015*	RAL 7016
					
RAL 9003	RAL 9016	RAL 7046*	RAL 7011*	RAL 9005	

*Denotes colours that are made to order. Lead time is 3-4 weeks.

Colours are represented as accurately as possible, but individual monitor settings will affect how colours appear on your screen. Lenmak Exterior Innovations Inc. does not recommend selection of colours from this chart for manufacturing. Please contact us for physical colour samples to confirm your selection prior to placing your order. Minimum order quantities may apply.

Flawless from Fabrication to Finish



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Part 1 General

1.1 SUMMARY

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

1.2 RELATED REQUIREMENTS

- .1 **** [Section 05 41 00 - Structural Metal Stud Framing: Stud wall framing system]
****OR****
- .2 **** [Section 06 10 00 – Rough Carpentry: Wood framed exterior walls]
- .3 Section 07 92 00 - Joint Sealants

1.3 REFERENCE STANDARDS

- .1 American Architectural Manufacturers Association (AAMA):
 - .1 AAMA 2604-05 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
- .2 International Organization for Standardization (ISO):
 - .1 ISO 1519 - Paints and varnishes - Bend test (cylindrical mandrel).
 - .2 ISO 1520 - Paints and varnishes - Cupping test.
 - .3 ISO 2409 - Paints and varnishes - Cross-cut test.
 - .4 ISO 2815 - Paints and varnishes - Buchholz indentation test.

- .3 American Society for Testing and Materials (ASTM):
 - .1 ASTM B209/B209M-14 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 - .2 ASTM B117 – Practice for Operating Salt Spray (Fog) Apparatus.
 - .3 ASTM D522 – Test Methods for Mandrel Bend Test of Attached Organic Coatings.
 - .4 ASTM D523 – Test Method for Specular Gloss.
 - .5 ASTM D714 – Test Method for Evaluating Degree of Blistering of Paints.
 - .6 ASTM D968 – Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
 - .7 ASTM D1400 – Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base.
 - .8 ASTM D1654 – Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
 - .9 ASTM D1730 – Practices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting.
 - .10 ASTM D2247 – Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
 - .11 ASTM D2794 – Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
 - .12 ASTM D3359 – Test Methods for Measuring Adhesion by Tape Test.
 - .13 ASTM D3363 – Test Method for Film Hardness by Pencil Test.
 - .14 ASTM D3451 – Practices for Testing Polymeric Powders and Powder Coatings.
 - .15 ASTM D4214 – Test Method for Evaluating Degree of Chalking of Exterior Paint Films.
 - .16 ASTM D5382 – A Guide to Evaluation of Optical Properties of Powder Coatings.
 - .17 ASTM D5861 – Guide to Significance or Particle Size Measurements of Coating Powders.
 - .18 ASTM D6441 – Test Methods for Measuring the Hiding Power of Powder Coatings.

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 the Work with installation of [windows] [doors] [louvres] and other components penetrating siding assemblies.
- .2 ****Pre-Installation Meeting: Before starting work of this Section, arrange a meeting in accordance with Section [01 31 19], with Contractor, siding Subcontractor, Subcontractors responsible for adjacent work, and Subcontractors responsible for work that penetrates siding 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 written 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 wall panel system, include dimensions, location of joints, profiles of panels, supports types and locations, fasteners, flashing, closures and all metal components related to cladding 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: Submit a sample, in manufacturer's standard size for each panel illustrating colour, finish, texture, and perforation pattern. Sample to be sufficiently large to illustrate the full perforation pattern.
- .3 Informational Submittals:
 - .1 Installation Data: Submit manufacturer's installation instructions, special handling criteria, installation sequence, and cleaning procedures.
 - .2 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- .1 **** 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].
- .2 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: Company specializing in manufacturing the Products specified in this Section with minimum [three (3)] years documented experience.
- .2 **** Installer Qualifications: Company specializing in performing the work of this Section with minimum [three (3)] years documented experience [and approved by the manufacturer].

1.7 MOCK-UP

- .1 **** 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 siding [and soffit system], attachments to building [frame], weep drainage system, and sealants.
 - .1 **** Locate [where jointly agreed between Consultant and Contractor] [where directed by Consultant].
 - .2 Approved mock-up may remain as part of the Work.

1.8 DELIVERY, STORAGE, AND HANDLING

- .1 Transport, handle, and store 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.

1.9 WARRANTY

- .1 Five-year warranty for architectural projects requires project-specific application. Submit project data to manufacturer for filing of warranty minimum ten (10) days prior to closeout.

Part 2 Products

2.1 MANUFACTURERS

- .1 Lenmak Exterior Innovations Inc., Silhouette Wall Panels
- .2 **** Substitutions: [Not permitted] [Refer to Section [01 25 00] [01 62 00]

2.2 DESCRIPTION

- .1 **** Wall System: Preformed single skin metal panels with custom perforations, fastened to [steel] [wood] framing system with concealed fastening [and sub-girt system].
- .2 **** [Soffit System: Factory formed, prefinished, single skin profiled metal panels; fastened to [steel] [wood] framing system with concealed fastening system]

2.3 PERFORMANCE REQUIREMENTS

- .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 applicable building code] [to a design pressure of [] kPa ([] lb/sq. ft.).
- .2 **** Maximum Allowable Deflection of Aluminum Panel: L/60 of span
****OR****

- .3 **** Maximum Allowable Deflection of Stainless steel Panel: [L/90] [L/180] [L/240] of span
- .4 **** Thermal Movement: Provide for expansion and contraction within system components caused by a cycling temperature range of [20 degrees Celsius], ambient; [40 degrees Celsius] seasonally without overstressing components causing buckling, failure of connections, or other detrimental effects.
- .5 Design expansion joints to accommodate movement in panels and between panels and structure to prevent permanent distortion or damage to panel system.
- .6 Seismic Loads: Design and size components to withstand seismic loads and sway displacement as calculated in accordance with applicable building code.
- .7 Drainage: Provide panel system to avoid trapping moisture entering or condensation occurring within panel system.

2.4 SHEET MATERIALS

- .1 **** Aluminum: To 5005 or 5052-H32 to ASTM B209, **** [24.7% pre-consumer and 55.8% post-consumer recycled content]
 - .1 Thickness: 2 mm (0.080 inch) with factory-applied coating
- .2 **** Stainless Steel: Sheet to ASTM A240, Type 304
 - .1 Thickness: 1.52 mm (16 ga)

2.5 ACCESSORIES

- .1 Fasteners: **** [Steel with long-term corrosion resistant coating] [Stainless steel], as recommended by manufacturer
- .2 Sealant and Backing Materials: **** [Polyurethane type] [Silicone type] [As specified in Section 07 92 00]
- .3 Horseshoe Spacers: As supplied by manufacturer for achieving installation tolerances and isolation from dissimilar metals.

2.6 COMPONENTS

- .1 **** Cladding Panels: [Stainless steel] [Aluminum], factory formed to [custom sizes indicated on Drawings], with concealed fasteners.
 - .1 **** Perforated Pattern: [Refer to Drawing A____] [____]
 - .2 **** Panel Size: [____] mm ([____] inches) x [____] mm ([____] inches)
 - .3 **** Panel Depth: [____] mm ([____] inches)
- .2 **** [Soffit Panels: [Same material and profile as wall panels] [Custom profile and material as indicated on Drawings]
- .3 Drip Flashing: Manufacturer's standard profile; thickness and finish to match wall panel.
- .4 **** Corner Trim: [Manufacturer's standard profile] [Custom profile as indicated on Drawings]; thickness and finish to match wall panel.
- .5 **** Reveal Trim: [Manufacturer's standard profile; thickness and finish to match wall panel] [Not applicable]

- .6 Starter Strip: Manufacturer's standard profile; thickness and finish to match wall panel.
- .7 Metal Framing: **** [As indicated on Drawings]
****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 panel and trim profiles true to shape, accurate in size, square, and free from excessive distortion and defects.
- .2 Factory fabricate components ready for site installation, in longest practical lengths.
- .3 Apply coating to requirements of coating manufacturer's written application instructions.
 - .1 Environmental Requirements:
 - .1 Maintain substrate and ambient temperature limits required by coating manufacturer.
 - .2 Apply coating only when surface to be coated is dry and adequately pre-treated.
 - .2 Preparation: surfaces to receive finishes must be dry and free of debris, oils, dust, or other deleterious materials.
 - .1 Grind fabrication welds smooth.
 - .2 Clean surfaces prior to pretreatment coating.
 - .3 Surface Cleaning:
 - .1 Clean surfaces to be coated as follows:
 - .1 Remove all dust, dirt, and other surface debris by vacuuming, wiping dry with clean cloths or compressed air.
 - .2 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .3 Allow surfaces to drain completely and allow to thoroughly dry.
 - .2 If the above procedures do not clean the substrate surfaces, clean the surfaces with high pressure water washing. Use water blasting only when necessary for extreme cases of contamination by oily residue and where hand washing is impractical.
 - .4 Pretreatment of aluminum surfaces:
 - .1 Apply pretreatment as soon as possible after cleaning and before surface deterioration occurs.
 - .2 Pre-treat to ASTM D1730 Type B, Method 5 using a multi-stage chromate process or an approved chrome-free pretreatment process approved by powder coating manufacturer.
 - .5 Method of Application: Electrostatic manual spraying.
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly fluidizing powder coating to be applied.

- .2 Apply coating materials to clean surfaces to minimum 2.5 - 3.5 mil dry film thickness or as specified by manufacturer.
- .3 Ensure coating adheres to internal corners and recessed areas.
- .6 Curing:
 - .1 Allow surfaces to cure for minimum time period as required by manufacturer.
 - .2 Cure in accordance with manufacturer's cure curves.

2.8 FINISHES

- .1 Powder-Coated Finishes:
 - .1 Powder Coating: Super Durable Polyester resin-based thermosetting powder, Series 38 High Performance Architectural Coating.
 - .1 **** Colour: [as selected from manufacturer's standard range][as indicated on drawings].
 - .2 Approved Manufacturers:
 - .1 TIGER Drylac® U.S.A., Inc., 1261 East Belmont Street, Ontario, California 91761; Phone (909)-930-9100, Fax (909) 930-9111; E-mail address: tiger@drylac.com. Web site address: www.tigerdrylac.com
 - .2 **** Substitutions: [Refer to Section 01600.] [Not permitted.]
- .2 Stainless Steel: No. 4 (brushed) finish

2.9 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. Oil canning is a moderate deformation of sheet metal surfaces, typically caused by uneven stresses at fastening points. 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. Mild "pillowing", "oil canning" or "crazing" are not deficiencies.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify existing conditions before starting work of this Section.
- .2 Verify dimensions, tolerances, and method of attachment with other work.
- .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] secured to [structural framing members through sheathing] [structural concrete] [structural concrete unit masonry].
- .2 Flashing: Install starter flashing, drip and other flashing, corners, edgings, and window and door flashings as shown on Drawings.
- .3 Exterior Cladding:
 - .1 **** Install wall cladding [and soffit material] to manufacturer's standard installation procedures, providing proper laps true to line, and without gaps.
 - .2 Install finishing flashing, cap flashing, trims and closures.
 - .3 Attach components in a manner that does not restrict movement associated with thermal expansion/contraction of materials.
- .4 Attach assembly to **** [building structure] [structural sheathing].
- .5 Align assembly plumb and level, free of twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- .6 Metal Corrosion Protection: Provide permanent separation material where dissimilar metals contact each other, at cementitious substrates, and corrosive substrates.
- .7 Sealants: Install sealants at junctions with adjoining work and where indicated on Drawings, and in accordance with Section 07 92 00.

3.3 INSTALLATION TOLERANCES

- .1 Maximum Offset from True Alignment between Adjacent Members Butting or In Line: 1.6 mm (1/16 inch)
- .2 Maximum Variation from Plane or Location Indicated on Drawings: 6 mm (1/4 inch)

3.4 CLEANING

- .1 Perform cleaning as indicated in **** [Section 01 74 23], and as follows:
 - .1 Remove site cuttings from finish surfaces, without scratching finishes.
 - .2 If panels show evidence of soiling, clean and wash prefinished surfaces with mild soap and water. Rinse with clean water.
 - .3 Repair and touch up very minor surface damage with colour-matching high grade paint, type as recommended by panel manufacturer.
 - .4 Replace damaged panels and components that cannot be satisfactorily repaired.

END OF SECTION

Product Name

Silhouette Wall Panels

Specification Section

MasterFormat 07 42 13.13

Manufacturer's Name

Lenmak Exterior Innovations Inc.



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PRODUCT DESCRIPTION

PRODUCT FEATURES

- **DESCRIPTION**
 - Custom fabricated, perforated metal wall panels with related flashings and accessory components.
 - Online brochure and technical information available at: <http://www.lenmak.com>
- **BASIC USES / RELATED USES**
 - Custom perforated exterior wall panels.
- **PRODUCT ATTRIBUTES AND CHARACTERISTICS**
 - Factory fabricated or custom designed to order and produced on demand.
 - Competitive lead times, due to automation and lean manufacturing processes. Rapid turn-around times.
 - Interlocking panel design permits fully concealed fastening.
 - Available in several solid and metallic finishes or brushed stainless steel, with no limits on production quantity.
 - Designed to be best in aesthetics, performance and cost efficiency.
- **SUSTAINABILITY CRITERIA**
 - Aluminum panels are made from recycled materials, and are 100% recyclable.
 - Minimum combined 24.7% pre-consumer and 55.8% post-consumer recycled content
- **APPLICABLE STANDARDS, RELATED REFERENCES**
 - .1 American Architectural Manufacturers Association (AAMA):
 - .1 AAMA 2604-05 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
 - .2 International Organization for Standardization (ISO):
 - .1 ISO 1519 - Paints and varnishes - Bend test (cylindrical mandrel).
 - .2 ISO 1520 - Paints and varnishes - Cupping test.
 - .3 ISO 2409 - Paints and varnishes - Cross-cut test.
 - .4 ISO 2815 - Paints and varnishes - Buchholz indentation test.
 - .3 American Society for Testing and Materials (ASTM):
 - .1 ASTM B209/B209M-14 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

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PRODUCT DESCRIPTION

- .2 ASTM B117 – Practice for Operating Salt Spray (Fog) Apparatus.
- .3 ASTM D522 – Test Methods for Mandrel Bend Test of Attached Organic Coatings.
- .4 ASTM D523 – Test Method for Specular Gloss.
- .5 ASTM D714 – Test Method for Evaluating Degree of Blistering of Paints.
- .6 ASTM D968 – Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
- .7 ASTM D1400 – Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base.
- .8 ASTM D1654 – Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- .9 ASTM D1730 – Practices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting.
- .10 ASTM D2247 – Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
- .11 ASTM D2794 – Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- .12 ASTM D3359 – Test Methods for Measuring Adhesion by Tape Test.
- .13 ASTM D3363 – Test Method for Film Hardness by Pencil Test.
- .14 ASTM D3451 – Practices for Testing Polymeric Powders and Powder Coatings.
- .15 ASTM D4214 – Test Method for Evaluating Degree of Chalking of Exterior Paint Films.
- .16 ASTM D5382 – A Guide to Evaluation of Optical Properties of Powder Coatings.
- .17 ASTM D5861 – Guide to Significance or Particle Size Measurements of Coating Powders.
- .18 ASTM D6441 – Test Methods for Measuring the Hiding Power of Powder Coatings.

- **PERFORMANCE CRITERIA**

- System Design: 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 applicable code.
- Thermal Movement: Provide for expansion and contraction within system components.
- Design expansion joints to accommodate movement in siding panel assembly and between siding and structure to prevent permanent distortion or damage to siding.
- Seismic Loads: Design and size components to withstand seismic loads and sway displacement as calculated in accordance with applicable code.
- Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

- **PACKAGING, HANDLING, PROTECTION, AND DELIVERY INSTRUCTIONS**

- Packaged in crates.

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Silhouette Wall Panels

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Lenmak Exterior Innovations Inc.



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PRODUCT DESCRIPTION

- **SPECIAL WARRANTY**
 - Five-year warranty for architectural projects requires project-specific application. Submit project data to manufacturer for filing of warranty minimum ten (10) days prior to closeout.
- **LIMITATIONS**
 - 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. Oil canning is a moderate deformation of sheet metal surfaces, typically caused by uneven stresses at fastening points. Metal forming during panel fabrication may result fine cracks in finishes (crazing) at outer edges or bends. Mild “pillowing”, “oil canning” or “crazing” are not deficiencies.
 - Anodized aluminum may be available as a custom finish, though it is not recommended for commercial projects and does not include a finish warranty.
- **AVAILABILITY**
 - Direct from Lenmak Exterior Innovations Inc.
- **COST**
 - Consult Lenmak Exterior Innovations Inc for specific product costs or relative costs.

PRODUCT PROPERTIES

- **MATERIALS**
 - Panels:
 - Aluminum: To 5005 or 5052-H32 to ASTM B209, minimum 24.7% pre-consumer and 55.8% post consumer recycled content
 - Thickness: 2 mm (0.080 inch) with factory-applied coating
 - Stainless Steel: Sheet to ASTM A240, Type 304
 - Thickness: 1.52 mm (16 ga)
 - Trim and Related Components:
 - Same material and finish as panels
 - Aluminum thickness: 0.81mm (.032 inch).
 - Stainless Steel thickness: 0.61mm (.024 inch).
- **SIZES**
 - Panel Size and Profile: Custom designed to suit; consult Lenmak Exterior Innovations Inc.
 - Panel Perforations: Custom designed to suit; consult Lenmak Exterior Innovations Inc.

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Lenmak Exterior Innovations Inc.



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PRODUCT DESCRIPTION

- **ACCESSORIES**
 - Fasteners: As recommended by manufacturer in the following materials:
 - Long-term corrosion resistant coated steel
 - Stainless steel
 - Horseshoe Spacers: Supplied by manufacturer, to achieve installation tolerances and isolation from dissimilar metals.
 - Sealant and Backing Materials: Polyurethane or silicone type
- **SHOP FABRICATION AND ASSEMBLY**
 - Form metal profiles true to shape, accurate in size, square, and free from distortions.
 - Factory fabricate components ready for site installation.
 - Fabricate in longest practical lengths.
 - All components are site assembled.
- **FINISH**
 - Powder-Coated Finishes:
 - Powder Coating: Super Durable Polyester resin-based thermosetting powder, Series 38 High Performance Architectural Coating.
 - Colour: Select from manufacturer's standard range
 - Finish Manufacturer:
 - TIGER Drylac® U.S.A., Inc., 1261 East Belmont Street, Ontario, California 91761; Phone (909)-930-9100, Fax (909) 930-9111; E-mail address: tiger@drylac.com. Web site address: www.tigerdrylac.com
 - Stainless Steel: No. 4 (brushed) finish
- **INSTALLATION**
 - Install supporting furring or framing secured to structural framing members, cast-in-place concrete structure or structural concrete unit masonry.
 - Install panels in accordance with manufacturer's written instructions and as indicated on shop drawings.
 - Separate dissimilar metals with permanent isolating material.
 - Align assembly plumb and level, free of twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- **WASTE RECYCLING**
 - Any metal waste generated during installation is fully recyclable.

Product Name

Silhouette Wall Panels

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Manufacturer's Name

Lenmak Exterior Innovations Inc.



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PRODUCT DESCRIPTION

Corporate Identification

Lenmak Exterior Innovations Inc.

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orderdesk@lenmak.com

Classification and Filing

MasterFormat 2014:

07 42 13.23 – Formed Metal Wall Panels

OmniClass:

23-13 37 15 11 - Metal Exterior Siding

UniFormat:

B2010.10 - Exterior Wall Veneer

END



CLEANING RECOMMENDATIONS

For powder coated metal façade components.

A thorough cleaning of coated façade components is required to conserve the façade decorative appearance and to reduce the corrosion strain.

Powder coated surfaces proper maintenance and regular servicing are prerequisites for claims related to any guarantee and require regular cleaning at least once per year. Buildings must be cleaned more often when they are located in severe polluted environments such as a region with increased salt contamination and/or chemical exhausts, a direct area of influence or within the vicinity of an industrial or chemical enterprise, the immediate vicinity of a sea coast or within a defined chemical/radioactive precipitation zone. An early detection of a possible damage can allow timely recognition and can be remedied on time by suitable measures.

When a coated component is soiled during transportation, storage or assembly, cleaning the component must take place immediately with clear cold or lukewarm water. A neutral or weak alkaline detergent can be used against severe soiling.

Certified façade cleaning

As a prerequisite of a coated construction proper care, the construction must be regularly cleaned according to the guidelines of the **Registered Quality Association for the Cleaning of Metal Façade Elements**, and is carried out by a member of the above mentioned association with detergents and cleaning aids in conformity with RAL-GZ 632-1996 and certified by the same association for the certified cleaning of façades with coated surfaces – before every initial cleaning and before every change to another detergent and cleaning-aid during ongoing cleaning intervals, these are to be additionally tested for their suitability on a test area facing south on an unexposed point of at least 21.5 ft² (2 m²) – or to be at least cleaned according to the following guidelines:

- As the case may be, use only clean water with slight additives of neutral washing agents (pH 5-8) with the aid of non-abrasive soft cloths, rags or industrial cotton. Strong rubbing is to be avoided.
- The removal of greasy, oily or sooty substances can take place with the use of white spirit free of aromatic compounds or isopropyl alcohol (IPA). Adhesives, silicone cartouche, adhesive tapes or other residues can also be removed this way.
- Do not use solvents or similar diluents containing ester, ketones, alcohol, aromatics, ethylene glycol or halogenated hydrocarbon.
- Joint sealants and other aids such as glazing aids, lubricant agents, drilling and cutting lubricants which come into contact with coated surfaces, must be pH-neutral and free of paint-damaging substances. They must be first subjected to a suitability test.
- Due to the danger of changes in a color tone or effect, a test for suitability is to be undertaken for metallic powder coatings.
- Do not use scratching or abrasive agents.
- Do not use strong acids, alkaline detergents or introfiers.
- Do not use detergents of unknown composition.
- Detergents must not be used at temperatures higher than 77 °F (25 °C).
- Do not use steam-jet devices.
- During cleaning, the façade components surface temperature must not exceed 77 °F (25 °C).
- The maximum exposure period of detergents must not exceed one hour. When necessary, the entire cleaning process can be repeated at least after 24 hours.
- Rinsing with clean cold water should take place immediately after every cleaning process.

Further Information for maintenance and cleaning can be obtained, among others, from the American Architectural Manufacturer's Association (AAMA 610-1979 Cleaning Procedures).