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Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat, SectionFormat,* and *PageFormat,* as described in *The Project Resource Manual—CSI Manual of Practice.*

The section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the Drawings. Delete all Specifier Notes when editing this section.

Section numbers and titles are from *MasterFormat 2018 Edition*.

Brackets indicate options in text to be filled in or deleted by the author; they should NOT be visible in final document.

SECTION 07 42 13

METAL WALL PANELS

Specifier Notes: This section covers aluminum, stainless steel and ZALMAG® information for the Millennium Forms, LLC Flat Lock Panels wall panels. Consult Millennium Forms for assistance in editing this section for the specific application.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Concealed fastener, factory-formed, aluminum [stainless steel] [ZALMAG®] wall panel system.

1.2 RELATED SECTIONS

Specifier Notes: Edit the following list of related sections as required for the project. List other sections with work directly related to this section.

A. Section 05 40 00 – Cold-Formed Metal Framing: Secondary support framing supporting metal wall panels.

B. Section 06 10 00 – Rough Carpentry.

C. Section 07 21 00 – Thermal Insulation.

D. Section 07 25 00 – Weather Barriers.

E. Section 07 26 00 – Vapor Retarders.

F. Section 07 27 00 – Air Barriers.

G. Section 07 60 00 – Flashing and Sheet Metal.

H. Section 07 92 00 – Joint Sealants.

1.3 REFERENCES

Specifier Notes: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used.

A. American Architectural Manufacturer's Association (AAMA);

a. AAMA 508 – Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.

b. AAMA 620 – Voluntary Specification for High Performance Organic Coatings on Coil Coated Architectural Aluminum Substrates.

c. AAMA 621 – Voluntary Specification for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized and Zalmag-Aluminum Coated Steel Substrates.

B. ASTM International (ASTM);

a. ASTM A 653 – Specification for Steel Sheet, Zinc-Coated or Zinc-Iron Alloy -Coated by the Hot-Dip Process.

b. ASTM B 209 – Specification for Aluminum and Aluminum Alloy Sheet and Plate.

c. ASTM E 331 – Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

C. American Iron and Steel Institute (AISI)

D. ASCE-7, Minimum Design Loads for Buildings and Other Structures

E. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

A. Metal wall system as designed by the manufacturer shall be a complete system. All components of the system shall be supplied by the same manufacturer.

B. Design load application shall be in accordance with local building code.

C. Deflection Limit: For wind loads, the maximum panel deflection normal to the plane of the wall shall not exceed L/60 of the full span.

D. Accessories and fasteners shall be capable of resisting the specified design wind suction forces and other applicable loads in accordance with local building code.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

   a. Temperature Change (Range): 120 deg F, ambient ; 180 deg F, material surfaces.

1.5 SUBMITTALS

A. Comply with Section 01 33 00 – Submittal Procedures.

B. Product Data: Submit panel manufacturer's product data, including surface preparation and installation instructions.

C. Shop Drawings: Submit panel shop drawings consisting of design and erection drawings, finish specifications, and other data necessary to clearly describe the design, materials, sizes, layouts, construction details, and erection. Submit small-scale layouts of panels and large-scale details of edge conditions, joints, fastener and sealant placement, flashings, penetrations, and special details. Distinction must be made between factory and field assembled work. Drawings shall be approved prior to fabrication.

D. Submit structural design calculations, in accordance with appropriate code requirements for the metal wall panel system. A professional engineer registered in the state where the project is located shall sign and seal the calculations.

Specifier Notes: Millennium Forms, LLC Light Interference Color (LIC) process is created through a prismatic separation of light on the surface of stainless steel. Light conditions, viewing angles and the standard tolerances of chemical recipes within stainless steel will create a variation in the perceived color. Additionally, each LIC color Millennium Forms, LLC offers is produced as a range of color (color range). Each tile, because of these differences, will be its own signature tile. Prior to production millennium Forms, LLC will submit initial sample tiles in the specified color. The initial sample tiles are samples only and may not be an exact match to what will be provided for the project. The Project Reference photo or document is a representation of the color range that can be expected within the specified color. ("Color range" refers to the achievable: light, medium, dark range of a color.)

E. Samples
   1. Stainless Steel

i. Initial Samples: Submit one (1) or more sample of stainless steel of each Ligh Interference Color (LIC) requested, to show the natural variation and color range possible.
ii. Submittal Samples: Submit three (3) samples of stainless steel of each LIC requested to show the natural variation and color range of the product using material specifically sourced for the project. (Color range refers to the achievable light, medium, dark range of a color). Submittal samples of light, medium and dark are sent to customer for approval. When applicable, three (3) submittal sets, in the form of 10"x10" are sent and should be dispersed to appropriate decision makers (Millennium Forms, LLC suggest submitting to Architect and Building Owner).

2. Aluminum
   i. Initial Samples: Submit one (1) or more sample of each color of aluminum requested.

3. ZALMAG
   i. Initial Samples: Submit one (1) or more sample of each finish of ZALMAG to show the finish range possible.

F. Specific Project Reference: Submit manufacturer photograph(s) showing design intent of the finish range that can be expected within wall panels.

G. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

H. Installation Instructions: Manufacturer's written instructions including surface preparation and installation procedures.

I. LEED Submittals: Provide certificate stating average recycled content of steel products made up of postconsumer and preconsumer recycled content is not less than 70 percent.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions.

C. Handling: Protect materials during handling and installation to prevent damage.

1.7 WARRANTY

Specifier Notes: Edit the following as required by architect/owner and as agreed upon by panel manufacturer.

A. See Section 07 78 00 – Closeout Submittals for additional information.

B. Submit manufacturer's standard limited liability warranty stating that metal panels will be free from manufacturing defects which adversely affect tile's performance.

PART 2 PRODUCTS

2.1 MANUFACTURER

C. Millennium Forms, LLC, 550 East Centralia Street, Elkhorn, WI 53121 Phone
   1. 262.723.7778 Website www.millenniumforms.com E-mail info@millenniumforms.com

Specifier Notes: Edit the following as agreed upon by architect/owner.

D. Substitutions: Not permitted.

E. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 – Product Requirements.

2.2 METAL WALL PANELS

Specifier Notes: Specify type of stainless steel. Type 316 has greater corrosion resistance and is typically used for marine application. Type 316 should be considered for installation within 2 miles of seawater and salt air. Some urban environments may also require the use of Type 316 due to high use of road salt. Consult others for site specific information. Type 316 has a premium when compared to Type 304. Select appropriate material and finish(es). Contact Millennium Forms LLC for available color/finish.

A. Millennium Forms Flat Lock Panel: Pre-finished concealed fastener metal wall system with 4-sided interlocking design or factory-formed metal panels designed to be field assembled by interconnecting side edges of adjacent panels and mechanically attaching to supports using concealed fasteners in provided clips.

   1. Aluminum Wall Panels
      i. Material: [3003-H14, 5205 and 5005 alloy dictated by color]
         1. Base Material: ASTM B209, smooth surface coil-coating
         2. Weight: (mill tolerances apply)
            a. 0.032": 0.46PSF
            b. 0.040": 0.57PSF
         3. Thickness: 0.032 inch +/- .002 inch (0.8mm), 0.040 inch +/- .002 inch (1.0 mm), mill tolerances apply.
         4. Density: 0.10 lbs/in^3
         5. Temper: Hot Rolled
         6. Tensile Strength: ASTM B 209, 20,000 psi. (min.)
         7. Yield Strength: ASTM B 209, 17,000 psi. (min.)
         8. Elongation: ASTM B 209, 4%
         9. Rockwell Hardness: ASTM E18, 40
         10. Thermal Conductivity: 1100 BTU-in/hr-ft^2-ºF
         11. Finish: Contact Millennium Forms LLC for available color/finish options

   2. ZALMAG® Wall Panels

Specifier Notes: Select applicable finish. 'Pre-Patina II' and 'Black' are coatings produced as a range. The range of finish varies due to the natural variations in the base metal surface, as well as the ZALMAG® natural weathering process.

i. Material: ZALMAG®
   1. Base Material: ASTM A1046/A1046M, with corrosion-resistant coating
   2. Coating consists of Zinc, Aluminum and Magnesium.
   3. Weight: (mill tolerances apply)
      a. 24 GA (0.024" thick): 1.00PSF
      b. 22 GA (0.030" thick): 1.30PSF
   4. Thickness: 0.024 inch +/- .002 inch, mill tolerances apply.
   5. Density: 0.29 lbs/in^3
   6. Temper: Hot Rolled
   7. Tensile Strength: ASTM E8/E8M, 50,000 psi. (min.)
   8. Yield Strength: ASTM E8/E8M, 27,600 psi. (min.)
   9. Elongation: ASTM E8/E8M, 22%
   10. Rockwell Hardness: ASTM E18, 58
   11. Thermal Conductivity: 360 BTU-in/hr-ft^2-ºF
   12. Finish:
      a. Natural
      b. Pre-Patina II
      c. Black

3. Stainless Steel Wall Panels
   i. Material: [Type 304, Type 316]
      1. Base Material: ASTM A240/A240M, stainless steel sheet.
      2. Weight: (mill tolerances apply)
         a. 18ga: 2.09 PSF
         b. 22ga: 1.26 PSF
         c. 24ga: 1.00 PSF
      3. Thickness: 0.05 (18ga) +/- .002 inch; 0.03 (22ga) +/- .002 inch; 0.024 (24ga) +/- 0.002 inch
      4. Density: 0.29 lbs/in^3
      5. Temper: Annealed
      6. Tensile Strength: ASTM E8/E8M; 90ksi
      7. Yield Strength: ASTM E8/E8M; 40ksi
      8. Elongation: ASTM E8/E8M; 55% in 2inches
      9. Rockwell Hardness: ASTM E18/E18M; B82
      10. Thermal Conductivity: 9.2 BTU/ft^2/hr/ºF/ft at 68ºF
      11. Recycled Content: 75%
      12. Finish:
         a. 2B (mill) mill tolerances apply
         b. BA (bright) mill tolerances apply
      13. Color:
         a. Natural (no color)
         b. Pewter (satin etched surface available on 2B (mill) finish)
         c. Bronze (LIC)
         d. Charcoal (only available in #4 polish finish) (LIC)

e. Blue (LIC)
f. Slate (only available in 2B (mill) finish) (LIC)
g. Bronze-Gold (LIC)
h. Burgundy (LIC)
i. Purple-Blue (only available in BA (bright) finish) (LIC)
j. Peacock (LIC)
k. Blue-Green (LIC)

2.3 ACCESSORIES

Specifier Notes: Clips to be 20ga 316SS for stainless steel and aluminum panels. Galvanized shall be specified for ZALMAG® panels.

A. Clips:
   1. Millennium Forms 20ga 316SS [24ga Galvanized].

B. Fasteners for clip attachment to substrate:
   1. (2) #12-14 per clip into steel substrate, thread design and length appropriate for substrate.
   2. (2) #12 sheet metal screws per clip, thread design and length appropriate for substrate.
   3. Fasteners must be corrosion resistant, galvanized or 300 series stainless steel. Consult Millennium Forms for proper fastener material into fire-treated or pressure-treated wood as well as near the ocean, large bodies of water, or in humid climates.

C. Flashing and Trim: Same material and color as Flat Lock Panels, except where otherwise noted; See Section 07 60 00 - Sheet Metal Trim and Flashing for additional fabrication requirements.

Specifier Notes: Specify flashing and trim thickness. Consult manufacturer for more information. Specify thicker products where trim with level surface may be required for aesthetic reasons.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of work. Ensure weather barrier is properly installed and undamaged.

B. Notify Architect of conditions that would adversely affect installation.

C. Wall sheathing shall be solid ½" Plywood or 19/32" OSB, minimum thick.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

Specifier Notes: Consult manufacturer’s instructions for assistance in editing this article as required for the project.

A. Install metal wall panel in accordance with manufacturer’s written and published instructions and installation guides.

B. Utilize panels from several boxes during installation to ensure random color variation.

C. Use specified fasteners at spacing in accordance with manufacturer's instructions.

D. If the product has plastic protective film (PVC), plastic and metal product will maintain better in a cool, dry environment. Immediately remove plastic protective film as this can result in an easier removal process and also avoid undesirable adhesion transfer to the metal surface. Discretion is advised when scheduling the install of the product with plastic film.

E. Prevent dissimilar metals and corrosive nonmetallic materials from coming into contact with stainless steel materials.

F. Install trim and flashing in accordance with manufacturer's instructions.

G. Install joint sealants as specified in Section 07 92 00. Install joint sealants at overlapping flashing and exposed fastener heads.

3.3 CLEANING

A. Clean exposed metal surfaces in accordance with manufacturer’s instructions.

3.4 PROTECTION

A. Protect installed metal wall panel system as per manufacturer’s recommendation to ensure that, except for normal weathering, panel system will be without damage or deterioration at time of substantial completion.

END OF SECTION