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SECTION 07 41 13
METAL ROOF PANELS

Morin Metal Panels
SymmeTry Roof Series

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Structural standing seam metal roof panels.
- B. Accessories including concealed anchor clips, fasteners, perimeter flashing, trim and penetration treatments.

1.2 REFERENCES

A. ASTM International

1. ASTM A240; Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
2. ASTM A653; Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
3. ASTM A666; Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
4. ASTM B85; Standard Specification for Aluminum Alloy Die Castings.
5. ASTM B117; Standard Practice for Operating Salt Spray(Fog) Apparatus.
6. ASTM B209; Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
7. ASTM B221; Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
8. ASTM E1592; Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
9. ASTM E1646; Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
10. ASTM E1680; Standard Test Method for Rate of Air Leakage through Exterior Metal Roof Panel Systems.
11. ASTM E2140-01(2009); Standard Test Method for Water Penetration of Metal Panel Roof Systems by Static Water Pressure Head

- B. Florida Building Code – current edition, product approvals.
- C. Southern Building Code Conference International (SBCCI)
 - 1. SBCCI Standard 12-99; Standard for Determining the Wind Resistance from Windborne Debris.
- D. Underwriters Laboratories (UL)
 - 1. UL 580; Tests for Uplift Resistance of Roof Assemblies
- E. Factory Mutual (FM)
 - 1. FM 4471; Approval Standard for Class 1 Panel Roofs

1.3 SUBMITTALS

- A. Refer to Section [01 33 00 Submittal Procedures] [Insert section number and title].
- B. Product Data: Submit manufacturer current technical literature for each type of product.
- C. Shop Drawings - Submit detailed drawings showing:
 - 1. Profile
 - 2. Gauge of panel
 - 3. Location, layout and dimensions of panels
 - 4. Location and type of fasteners
 - 5. Shape and method of attachment of all trim
 - 6. Locations and type of sealants
 - 7. Installation sequence.
 - 8. Other details as may be required for a weathertight installation
- D. Samples: Provide nominal 3 x 5 inch of each color indicated. [Provide panel width by 10 inches long minimum] [Insert size].
- E. LEED Submittals:
 - 1. Sustainable Sites (SS)
 - a. Product Test Reports or current product listing on <http://www.energystar.gov> for Credit SS 7.2: For metal roof panels, indicating that panels comply with Solar Reflectance Index (SRI) requirement.

2. Material and Resources (MR)

- a. Product Certificates for Credit [MR 4] [MR 4.1] [MR 4.2]: For products having recycled content, documentation indicating percentages by weight of post-consumer and pre-consumer recycled content.

F. Quality Assurance Submittals

1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with requirements.
2. Manufacturer Erection Instructions: Provide manufacturer's written installation instructions including proper material storage, material handling, installation sequence, panel location(s), and attachment methods, details and required trim and accessories.

G. Closeout Submittals

1. Refer to Section [01 78 00 Closeout Submittals] [Insert section number and title].

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation meeting: Conduct a pre-installation meeting at the job site attended by Owner, Architect, Manufacturer's Technical Representative, Panel Installer, and Contractors of related trades. Coordinate structural support requirements in relation to roof panel system, installation of any separate air/water barriers, treatment of fenestration, and other requirements specific to the project.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall have a minimum of ten (10) years experience in the production of metal roof panels. Manufacturer shall demonstrate past experience with examples of projects of similar type and exposure.
- B. Installer Qualifications: Installer shall be authorized by the manufacturer regarding proper installation of the specified product, and have a minimum of five (5) years experience with projects of similar size and scope.
- C. Metal roof panel attachment shall meet the requirements of Factory Mutual 4471 – Class 1 Rating.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section [01 60 00 Product Requirements] [Insert section number and title].
- B. Deliver panel materials and components in manufacturer's original, unopened, undamaged packaging with identification labels intact.
- C. Store roof panel materials on dry, level, firm, and clean surface. Elevate one end of bundle to allow moisture run-off, cover and ventilate to allow air to circulate and moisture to escape.

1.7 WARRANTY

- A. Refer to Section [01 78 36 Warranties] [Insert section number and title].
- B. Material Warranty: Standard form in which manufacturer agrees to repair or replace items that fail in materials or workmanship within specified warranty period. The items covered by the warranty include structural performance and material integrity.
 - 1. Warranty Period: Two (2) years from date of Substantial Completion.
- C. Finish Warranty: Standard form in which manufacturer agrees to repair or replace metal panels that evidence deterioration of fluoropolymer finish, including flaking or peeling from approved primed metal substrate, chalk in excess of 8 when tested in accordance with ASTM D4214, Method A, and /or color fading in excess of 5 ΔE Hunter units on panels when tested in accordance with ASTM D2244.
 - 1. Warranty Period: Twenty (20) years from date of Substantial Completion, or 20 years and 3 months from the date of shipment from manufacturer's plant, whichever occurs first.
- D. Installers "Weather-tight" Warranty: The Manufacturer Certified Installer shall provide a "leak-free" roofing warranty in which the installer agrees to repair leaks discovered in the roofing system under the terms outlined by the roofing manufacturer within the specified warranty period.
 - 1. Warranty Period: Two (2) years from date Substantial Completion.
- E. Weather-tight Warranty: Provide manufacturer's limited weathertightness warranty in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Twenty (20) years from date Substantial Completion, or 20 years and 3 months from the date of shipment from manufacturer's plant, whichever occurs first.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Morin – a Kingspan Group Company; 685 Middle Street, Bristol, Connecticut 06010; 10707 Commerce Way, Fontana, California 92337; 1975 Eidson Drive, DeLand, Florida 32724 1-800-640-9501 (Toll Free); (www.morincorp.com)
- B. Basis of Design: SymmeTry Roof Series (Structural Standing Seam Metal Roof Panels).
- C. Substitution Limitations:
 1. Submit written request for approval of substitutions to the Architect [a minimum of [14] days prior to the date for receipt of bids] [Insert time period]. Include the following information:
 - a. Name of the materials and description of the proposed substitute.
 - b. Drawings, cut sheets, performance and test data.
 - c. List of projects similar scope and photographs of existing installations.
 - d. Other information necessary for evaluation.
 2. After evaluation by Architect, approval will be issued via addendum. No verbal approval will be given.
 3. Substitutions following award of contract are not allowed except as stipulated in Division 01 – General Requirements.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance:
 1. Roof assembly shall be tested for structural performance under uniform static air pressure differences in accordance with ASTM E1592.
 - a. Uniform Pressure: [insert design pressure] [as indicated on drawings]; acting inward or outward.
 2. Roof assembly shall be approved by the Florida Building Code (FBC) for impact resistance and uplift in accordance with Product Approval
 3. Snow Loads: [insert snow load]
 4. Deflection: Panel shall be limited to [L/180] [L/240].

- B. Metal roof panels shall be capable of withstanding a 250 pound concentrated load applied to a 4 square inch area in the middle of the panel. No noticeable buckling or permanent distortion of the panel shall occur.
- C. Water Penetration under Static Pressure: Provide metal roof panel systems designed to resist penetration of water under static pressure. Testing shall be based on ASTM E1646. Roof panels when tested shall have no water leakage at 40.0 pounds per square foot.
- D. Air Infiltration: Provide metal roof panel assemblies designed to resist air infiltration. Testing shall be done based on ASTM E1680. Roof panels when tested shall have a maximum air infiltration leakage of 0.006 cfm per square feet of fixed roof area at a minimum static air-pressure differential of 40.0 foot pounds per square foot.
- E. Wind Uplift Resistance:
 - 1. Roof assembly shall comply with UL 580 for wind uplift resistance; class UL 90
 - 2. FM Global Approvals; per FM Approval Standard 4471.
 - a. Metal roof panel attachments shall meet the requirements of FM Class
 - b. Hailstorm Rating: SH.
- F. Energy Performance:
 - 1. Energy Star Qualified: Metal panels shall meet the requirements of Energy Star Roofing Products for [low-slope] [steep slope].
 - 2. Solar Reflectance Index: Panels shall have a solar reflectance Index of not less than [78 for low-sloped roofs] [29 for steep sloped roofs].
- G. Fire Performance: Roof assembly to meet requirements of ASTM E108, Class A.

2.3 ROOF PANEL MATERIALS

- A. Steel:
 - 1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792, Class AZ50 coating designation, Grade 40.
 - 2. [Zinc-Coated (Galvanized) Steel Sheet: ASTM A653, G90 coating designation)
 - 3. Gauge: [24] [22]
- B. Aluminum:
 - 1. Coil stock meeting ASTM B209; 3003-H14 as required for forming operations.
 - 2. Gauge: [0.040] [0.050] inch.

2.4 ROOF PANELS

- A. Roof Panel Descriptions:
1. Panel Width: [12] [16] [18] inches
 2. Profile: SymmeTry Roof Series
 3. Seam Height: [1 ½ inches] [2 inches] [2 ½ inches] [3 inches]
 4. Texture: [Smooth] [Embossed]

2.5 INSULATION

- A. Refer to Section [07 21 00 - Thermal Insulation] [Insert section number and title].

2.6 ACCESSORIES

- A. Roof panel accessories: Provide accessories as required for a complete installation. Accessories shall be as indicated on approved shop drawings and per manufacturer's approved standard details.
1. Fasteners: Fasteners as recommended by manufacturer.
 2. Concealed Anchor Clips: Floating anchor clip, two piece, or single halter style clip.
 3. Closure Strips: Provide closed cell closure strips, minimum 1 inch thick matching metal roof panel profile.
- B. Flashing and Trim:
1. Fabricate flashing and trim from same material as roof panels unless otherwise noted. Finish to match metal roof panels.
 2. Locations include, but are not limited to the following: Drips, eave and rake edges, roof penetrations, hips, and valleys.
- C. Panel Sealant:
1. Joint Sealant: ASTM C920 as recommended in writing by metal roof panel manufacturer.
 2. Butyl Tape: Per panel manufacturer's recommendations for panel to panel and panel to trim seal.
 3. Butyl Sealants: Non-skinning type per panels manufacturer's recommendations.
- D. Snow Guards:
1. Materials: Fabricate clamps, brackets and clips from [6061-T6 aluminum extrusions conforming to ASTM B221 or aluminum castings conforming to ASTM B85] or [brass].

2. Clamp Model: As recommended by clamp manufacturer and as approved by metal roof panel manufacturer.
3. Fasteners: Stainless steel 300 series.
4. Color Strips: Same material and finish as metal roof panels.
5. Snow and Ice Clips: Aluminum, with rubber foot, minimum 3 inches wide.
6. Manufacturers: "S-5 ColorGard" by Metal Roof Innovations, Ltd. Or ACE Clamp by PMC Industries, Inc.

2.7 FABRICATION

- A. Metal roof panels shall be formed to lap with edges of adjacent panels which are then mechanically attached to roof deck using fasteners and concealed anchor clips. Anchor clips are then machine seamed into standing seam.
- B. Fabricate metal roof panels with joints between panels designed to form weathertight seals.
- C. [Flashing and Trim Accessories: Fabricate trim accessories to comply with recommendations outlined in SMACNA's "Architectural Sheet Metal Manual".]

2.8 FINISHES

- A. [Steel] [Aluminum]:
 1. Finish and Color:
 - a. Color:
 - 1) Exposed Surface: [Selected from current Morin Metal Roof Panel color chart] [Custom color as selected by Architect] [Color indicated].
 - 2) Concealed Surface: [Manufacturer's standard primer] [Selected from current Morin Metal Roof Panel color chart] [Custom color as selected by Architect] [Color indicated].
 - b. Finish System:
 - 1) [1.0 mil. Fluoropolymer (PVDF) Two Coat system: 0.2 mil primer with 0.8 mil Kynar 500 (70%) SOLID color coat.]
 - 2) [1.0 mil. Fluoropolymer (PVDF) Two Coat system: 0.2 mil primer with 0.8 mil Kynar 500 (70%) MICA color coat.]
 - 3) [1.5 mil. Fluoropolymer (PVDF) Three Coat system: 0.2 mil primer with 0.8 mil Kynar 500 (70%) METALLIC color coat and .5 mil clear coat.]
 - 4) [2.4 mil. Fluoropolymer (PVDF) Three Coat system: 0.8 mil primer with 0.8 mil Kynar 500 (70%) SOLID color coat and 0.8 mil clear coat.]

- B. Exposed Aluminum-Zinc Alloy-Coating: ASTM A792, Class AZ50 coating. "Galvalume" or "Zincalume" protective coating.
- C. Aluminum: Mill finish

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Provide field measurements to manufacturer as required to achieve proper fit of the metal roof panels to building envelope. Measurements shall be provided in a timely manner so that there is no impact to construction or manufacturing schedule.
- B. Supporting Steel: All structural supports required for installation of panels shall be by others. Support members shall be installed within the following tolerances:
 - 1. Plus or minus 1/4 inch in 20 feet in any direction along plane of framing.
 - 2. Plus or minus 1/2 inch from framing plane over entire roof.
- C. Examine individual panels upon removing from the bundle; notify manufacturer of panel defects. Do not install defective panels.

3.2 PANEL INSTALLATION

- A. Apply sealant to joints per manufacturer's recommendations and approved shop drawings.
- B. Install panels level and true-to-line to dimensions and layout indicated on approved shop drawings.
- C. Install metal roof panels in one piece lengths from ridge to eave unless otherwise indicated on approved shop drawings.
- D. Attach panels to framing using recommended clips, screws, fasteners and sealants as indicated on approved shop drawings.
- E. Installation shall be in accordance with manufacturer's installation guidelines and recommendations. Roof panels shall be installed weathertight, without distortion, buckles or waves.
- F. Seaming of panels shall be done using an electric powered seaming machine as recommended by manufacturer.
- G. Provide weatherproof fittings for pipe and conduit penetrating roof.

- H. Curb units shall be under/over type as recommended by roof panel manufacturer.
- I. Cutting and fitting of panels shall be neat, square and true. Torch cutting is prohibited.
- J. Dissimilar materials; where the metal panel system comes into contact with dissimilar materials, treat contact areas as recommended by roof panel manufacturer.
- K. Snow Guards: Install snow guards per manufacturer's installation instructions and approved shop drawings. Install color matched insert after snow guard installation is complete.

3.3 FLASHING AND TRIM INSTALLATION

- A. Place trim and trim fasteners only as indicated per details on the approved shop drawings.
- B. Apply sealant at trim, per manufacturer's details and approved shop drawings, for weathertight installation.

3.4 CLEANING AND PROTECTION

- A. Remove protective film immediately after installation.
- B. Touch-up, repair or replace metal panels and trim that have been damaged.
- C. After metal roof panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

END OF SECTION

DISCLAIMER:

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