

SECTION 074213 FORMED METAL WALL PANELS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. Additionally, the development concept and organizational arrangement of the American Institute of Architects (AIA) MASTERSPEC Program has been recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

Part 1 - GENERAL

1.1 Description of Work

- A. This section covers the pre-finished, pre-fabricated exposed fastener metal roof and wall system. All metal trim, accessories, fasteners, insulation and sealants indicated on the drawings as part of this section.
- B. Drawings and general provisions of the Contract, including general and Supplementary Conditions and Division 01 Specifications, apply to this section.
- C. Related Work Specified Elsewhere.
 - 1. Roof Deck structural steel, flat roof systems, perimeter edge systems. Roof hatches, firestopping not included in this section.

1.2 Summary

- A. Section Includes:
 - 1. Factory formed exposed fastener metal roof and wall panels
- B. Related work specified elsewhere. (Note: select from the below or add appropriate sections)
 - 1. Section 051200 - Structural Steel Framing
 - 2. Section 054000 - Cold-Formed Metal Framing
 - 3. Section 076200 - Sheet Metal Flashing and Trim

1.3 Definitions

- A. Metal Roof/Wall Panel Assembly: Metal roof/ panels, attachment system components, miscellaneous metal framing, thermal, and accessories necessary for a complete weathertight roofing system.
- B. References:
 - 1. American Society for Testing and Materials (ASTM)
 - a. ASTM B209: Aluminum and Aluminum Alloy Sheet and Plate
 - 2. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 - a. SMACNA Architectural Sheet Metal Manual, 1993 edition
 - 3. Aluminum Association
 - a. Aluminum Design Manual
 - 4. Metal Construction Association
 - a. Preformed metal Wall Guidelines
 - 5. Code References
 - a. ASCE, Minimum Loads for Buildings and Other Structures
 - b. IBC International Building Code

1.4 Quality Assurance

- A. Manufacturer and erector shall demonstrate experience of a minimum of five (5) years in this type of project.
- B. Panels shall be factory-produced only. No portable, installer-owned or installer-rented machines will be permitted.
- C. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

1.5 Substitutions

- A. The material, products and equipment specified in this section establish a standard for required function, dimension, appearance and quality to be met by any proposed substitution.
- B. Manufacturers listed in this section are prequalified manufacturers. Substitution of manufacturer's products for those specified shall not be allowed at any time during construction.

1.6 Roof System Performance Testing

- A. General Performance: Metal roof/wall panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation or other defects in construction.
- B. Roof System shall be designed to meet applicable building code Wind Load requirements.
- C. Panels to meet:
 - 1. Roof/Wall System shall be designed to meet applicable Local Building Code and the System shall have tested by the Manufacturer per ASTM E1592 and have the applicable Load Tables published from this testing for loads.

1.7 Submittals

- A. Furnish detailed drawings showing profile and gauge of exterior sheets, location and type of fasteners, location, gauges, shape and method of attachment of all trim locations and types of sealants, and any other details as may be required for a weather-tight installation.
- B. Provide finish samples of all colors specified.
- C. Shop drawings: Show fabrication and installation layouts of metal roof panels, metal wall panels or metal soffit panels, details of edge conditions, side-seam joints, panel profiles, corners, anchorages, trim, flashings, closures and accessories, and special details. Distinguish between factory and field-assembled work
- D. Coordination Drawings: Roof plans, drawn to scale, on which the following are shown and coordinated with each other, base don input from installer of the items involved:
 - 1. Roof panels and attachments.
 - 2. Metal trusses, bracings and supports.
 - 3. Roof-mounted items including snow guards and items mounted on roof curbs.
- E. LEED Submittals
 - 1. Product Test reports for Credit SS 7.2. For roof panels, indicating that the panels comply with Solar Reflective Index requirement.
{Specifier Note: Select if solar reflective coating is specified}
 - a. Product data for Credit MR 4.1 and credit MR 4.2: Indicating the percentages by weight of postconsumer and preconsumer recycled content for products having recycled content.

1.8 Delivery, Storage and Handling

- A. Ordering: Comply with manufacturer's ordering instruction and lead time requirements to avoid construction delays.
- B. Deliver components, sheets, metal roof/wall panels and other manufactured items so as not to be damaged or deformed. Package metal roof/wall panels for protection during transportation and handling.
- C. Unload, store and erect metal roof/wall panels in a manner to prevent bending, warping, twisting and surface damage.
- D. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof/wall panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting or other surface damage.
- E. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

1.9 Project Conditions

- A. Weather Limitations: proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

1.10 Coordination

- A. Coordinate sizes and locations of roof curbs, equipment supports and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim and construction of decks, parapet walls and other adjoining work to provide a leak-proof, secure and noncorrosive installation.

PART 2 - Products

2.1 Panel Design

- A. General: Provide factory-formed, prefinished, lappable exposed fastener, structural ribbed metal roof/wall panel system, that has been pretested and certified by manufacturer to comply with specified requirements under installed conditions.
- B. Roof panels shall be exposed fastener {Specifier Note: Choose from panel profile below}:
 - 1. 7.2 panel, with 1 1/2" high ribs at 7.2" on centers. The width of the crests shall be 2"; the width of the valleys shall be 2". Coverage for this panel shall be 36" for both roofing and wall applications.
 - or
 - Corrugated panels, with 2.67" x 7/8" deep profile ribs, or 2.67" x 1/2" deep profile ribs total coverage of Roof/Wall panels when installed shall be 34.67" coverage with 2 lapped ribs for roofing and 37.33" coverage with 1 lapped rib for siding.
- C. Structural Requirements: Engineer panels for structural properties in accordance with latest edition of American Iron and Steel Institute's Cold Formed Steel Design Manual using effective width concept and Aluminum Associations Aluminum Design Manual.
- D. Forming: Use continuous end rolling method. No end laps on panels. No portable rollforming machines will be permitted on this project, no installer-owned or installer-rented machines will be permitted. It is the intent of the Architect to provide Factory-Manufactured panel systems only for this project.
- E. Panels shall be directly fastened to the substrate.
- F. The panel shall have an overlapping sidelap feature.

2.2 Acceptable Manufacturers

- A. This project is detailed around the roofing/siding product, Reynolux®, of Arconic Architectural Products LLC (AAP) {Specifier Note: Choose from products below}:
 - 1. 7.2 Rib Panel
 - 2. 7/8" x 2.67" Corrugated Panel
 - 3. 1/2" x 2.67" Corrugated Panel

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2.3 Materials and Finishes

- A. Preformed roofing panels shall be fabricated of 0.040 Aluminum.
- B. Color shall be _____.
- C. Texture: Panel shall be smooth.
- D. Finish shall be Kynar 500® or Hylar 5000® Fluorocarbon coating with a top side film thickness of 0.70 to 0.90 mil over a 0.25 to 0.3 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil, to meet AAMA 2605 or AAMA 621 as applicable. Bottom side shall be coated with a primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesions, flexibility and longevity as specified by Kynar 500® or Hylar 5000® finish supplier.
- E. If Strippable coating to be applied on the pre-finished panels to the top side to protect the finish during fabrication, shipping and handling, film shall be removed before installation.
- F. Trim: Trim shall be fabricated of the same material and finish to match the profile, and will be press broken in lengths of 10 to 12 feet. Trim shall be formed only by the manufacturer of their approved dealer. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded material to match the sheeting. Trim to be fabricated in accordance with standard SMACNA procedure and details.
- G. Closures: shall be pre-molded polyethylene to match the profile of the exposed fastener panel and shall be in lengths as supplied by the panel manufacturer.
- H. Accessories/Fasteners: Fasteners shall be of type, material, size, corrosion resistance, holding power and other properties required to fasten miscellaneous framing members to substrates. Accessories and their fasteners shall be capable of resisting the specified design wind uplift forces and shall allow for thermal movement of the roof panel system. Exposed fasteners shall not restrict free movement of the roof panel system resulting from thermal forces, except at designed points of roof panel fixity
 - 1. Fasteners shall have combination steel and EPDM washers
 - 2. Screws for panel to girt/purlins shall be sufficient to penetrate the supporting member by 1". All fasteners shall be applied in accordance with the fastening schedule as provided by panel manufacturer.
 - 3. Screws for flashings and sidelaps shall be #14 HHA x 3/4" sheet metal stitch screws.
All accessories, flashings and sidelaps shall be fastened 12" OC.
- I. Substrate shall be {Specifier Note: Choose from material below}:
 - 1. Metal purlins
 - 2. Plywood
- J. Caulking: All caulking and sealing shall be done in a neat manner with excess caulking or sealant removed from exposed surfaces.
- K. Caulking shall be non-skinning, non hardening gun grade butyl sealant or butyl sealant tape with a minimum thickness of 1/8" where it is concealed and where thermal movement must be accommodated. All caulking or sealing shall be done in a neat manner with excess caulking or sealant removed from exposed surfaces.
- L. Vapor Retarder: retarder with a permeance of 0.05 or less as determined by ASTM 98.

2.4 Fabrication

- A. Comply with dimensions, profile limitations, gauges and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.
- B. Fabricate components of the system in factory, ready for field assembly.
- C. Fabricate components and assemble units to comply with fire performance requirements specified.
- D. Apply specified finishes in conformance with manufacturer's standard, and according to manufacturer's instructions.
- E. Panels are lappable. It is recommended that individual aluminum roof panels not exceed 16' in length for thermal movement reasons.
- F. Panels shall be roll formed on a stationary industrial type rolling mill to gradually shape the sheet metal. Portable rollformers rented or owned by the installer, are not acceptable.

PART 3 - Execution

3.1 Inspection

- A. Examine alignment of structural steel and related supports, primary and secondary roof framing, solid roof sheathing, prior to installation. Components should comply with shop drawings and be smooth, even, sound and free of depressions.
- B. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Fasteners

- A. Secure units to supports
- B. Place fasteners as indicated in manufacturer's standards.

3.3 Installation

- A. Panels shall be installed plumb and true in a proper alignment and in relation to the structural framing. The erector must have at least five years successful experience with similar applications.
- B. Install metal panels, fasteners, trim and related sealants in accordance with approved shop drawings and as may be required for a weather-tight installation. Conform to standards set forth in SMACNA architectural sheet metal manuals and approved shop drawings for this project.
- C. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.
- D. Install panel system so it is watertight, without waves, warps, buckles or distortions, and allow for thermal movement considerations.
- E. Abrasive devices shall not be used to cut on or near roof or wall panel system.
- F. Apply sealant tape or caulking as necessary at flashing and panel joints to prevent water penetration.
- G. Remove any strippable film immediately upon exposure to direct sunlight.
- H. Vapor retarder: The joints, perimeter, and all openings shall be sealed per the manufacturer's instructions to provide a continuous vapor retarder.
- I. Underlayment (solid substrate):
 - 1. Provide one layer of 30# felt with horizontal overlaps and endlaps staggered between layers.
 - 2. Provide ice and water shield membrane at all valley and eave conditions as well as any area at less than a 3:12 slope.
 - 3. Lay parallel to ridge line with 2½" horizontal laps and 6" vertical laps.

3.4 Damaged Material

- A. Upon determination of responsibility, repair or replace damaged metal panels and trim to the satisfaction of the Architect and Owner.

END OF SECTION 074213

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