SECTION 074213.13 - FORMED METAL WALL PANELS

1. GENERAL
   * + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
      1. SUMMARY
         1. Section Includes:

Concealed-fastener, lap-seam metal wall panels.

* + - 1. DEFINITIONS
         1. Company Field Advisor: An employee of the Company which lists and markets the primary components of the system under their name who is certified in writing by the Company to be technically qualified in design, installation, and servicing of the required products or an employee of an organization certified by the foregoing Company to be technically qualified in design, installation, and servicing of the required products.
      2. PREINSTALLATION MEETINGS
         1. Preinstallation Conference: Conduct conference at Project site.

Meet with Director’s Representative, insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.

Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

Review methods and procedures related to metal panel installation, including manufacturer's written instructions.

Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.

Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.

Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.

Review temporary protection requirements for metal panel assembly during and after installation.

Review of procedures for repair of metal panels damaged after installation.

Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

* + - 1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to this Section.
         5. Submit product data, samples, the items listed under Quality Control Submittals, and proposed deviations from the Contract Documents, at the same time as one complete package. Partial submittals will not be considered.

Proposed Deviations From The Contract Documents: To be considered for approval, proposed deviations must be submitted with the initial submittal package. Proposed deviations submitted after the initial submittals package is approved will not be considered or approved and may be cause for rejection of the previously approved manufacturer or system.

* + - * 1. Product Data: For each type of product.

Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

* + - * 1. Sustainable Design Submittals:

Retain "Product Data" subparagraph below to require minimum recycled content for LEED 2009 MR Credit 4 - "Recycled Content.

[Product Data](http://www.arcomnet.com/sustainable_design.aspx?topic=7): For recycled content, indicating postconsumer and preconsumer recycled content and cost.

* + - * 1. Shop Drawings:

Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

* + - * 1. Samples: For each type of metal panel indicated with factory-applied finishes.

Include Samples of trim and accessories involving color selection.

* + - * 1. Quality Control Submittals:

Qualification Data:

For Manufacturer.

For Installer.

Company Field Advisor Data.

Product Test Reports: For each product, for tests performed by a qualified testing agency.

Air and Water Infiltration Tests: Statement certifying that the roof system has been tested in accordance with the specified test procedure and that the specified minimum requirements have been achieved.

* + - * 1. Maintenance Data: For metal panels to include in maintenance manuals.
        2. Contract Closeout Submittals:

Warranties: For special warranties.

* + - 1. QUALITY ASSURANCE
         1. Manufacturer’s Qualifications:

The manufacturer shall have been actively marketing the proposed metal wall panel system for a minimum of 5 years.

The proposed metal wall panel system shall have previously been installed on a minimum of 5 projects of comparable scope and complexity to the Work of this Section.

* + - * 1. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

Actively installing specified metal wall panel systems for a minimum of 5 years.

Previously installed and completed a minimum of 5 metal wall panel system of comparable scope and complexity to the Work of this Section.

The people supervising the Work of this Section, the job foreman or crew chief, and the workers installing the metal wall panel system, must be qualified architectural sheet metal workers and shall have had a minimum 3 years of experience in the installation of metal wall panel systems.

* + - * 1. Manufacturer’s Company Field Advisor:

The manufacturer of the siding system, issuing the final system guarantee on this siding and roofing project, must supply a Company Field Advisor, as a technical representative, with the following minimum qualifications:

Documentation of 5 years of field experience on the same type of roofing system.

Documentation of 10 projects where role was a Company Field Advisor; include contact names and phone numbers for each project.

Documentation of attendance at a roof specific instructional seminar within the last two years.

It is mandatory to discuss the use of the paragraph below with the client, the division of construction, and perhaps the specified manufacturers, at project inception, particularly on downstate projects. There is a fee associated with the number of hours for a field advisor to be on a project. Include this additional cost in the project estimate beginning with the program estimate. Edit number of days and hours below depending on size and complexity of project. Six days at 4 hours per day could work as a minimum for a simpler project. Six days or more, at more than 4 hours per day could work for a larger, more complex project. Delete underlines before adding required information.

Secure the services of the Company Field Advisor for a minimum of \_\_\_\_\_\_\_ days at a minimum of \_\_\_\_\_\_\_\_\_ hours per day to inspect the workmanship of the roofing system installer.

Company Field Advisor Duties and Responsibilities:

Become familiar with the Contract Documents and approved submittals prior to the pre-siding and roofing conference.

Attend the pre-siding and roofing conference and the beginning of the actual membrane installation for the purpose of:

Rendering technical assistance to the Contractor regarding installation procedures of the system.

Familiarizing the Director’s Representative with all aspects of the system including inspection techniques.

Answering questions that might arise.

Edit remaining subparagraphs below to suit project complexity and need. Discuss appropriateness of subparagraphs with Design Project Manager and the Division of Construction.

Attend each bi-weekly meeting.

Be objective, unbiased and impartial in each inspection, recommendation, conversation, action and written report.

Inspect and approve the existing substrate, flashing, blocking, and related materials as being acceptable for the installation of the roofing system.

Ensure proper fastening patterns and fastener sizes of wood blocking, insulation, edge flashing, and related components.

Immediately report non-compliant conditions, if any, to the Director’s Representative.

Provide to the Director’s Representative a written report, submitted prior to leaving the Project Site each day the Company Field Advisor is present. Each daily written report shall contain at a minimum:

Date of report and inspection.

Weather conditions at the start, middle, and end of the work day.

Work performed including Contractor activity, contractor crew size, supervisor’s name, area of activity, and progress and quality of the work as observed.

Discussions with Contractor regarding work anomalies and resolution.

Conditions that are not in compliance with the Contract documents.

Continue documenting non-compliance issues in subsequent reports until the issue has been resolved. Document resolution of non-compliance issues when resolved.

Report to the Director’s Representative in writing failure or refusal of the Contractor to correct unacceptable practices called to the Contractor’s attention.

Confirm, after completion of the siding and roofing work and based on the Company Field Advisor’s inspections and tests, that the Company Field Advisor has observed no applications procedures in conflict with the specifications other than those that may have been previously reported and corrected.

Retain "UL-Certified, Portable Roll-Forming Equipment" paragraph below if portable roll-forming equipment is allowed for on-site roll forming.

* + - * 1. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.
        2. Benchmarks: Build benchmarks to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

Build benchmark of typical metal panel assembly in conjunction with roofing assembly, including corner, supports, attachments, and accessories.

Dimensions: 4 feet x 3 feet wide outside corner assembly in full thickness.

Approval of benchmark does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative specifically approves such deviations in writing.

Maintain the approved mockup assembly intact until roofing and siding installation is complete and approved, then remove mockup assembly from site.

* + - 1. DELIVERY, STORAGE, AND HANDLING
         1. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
         2. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
         3. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
         4. Retain strippable protective covering on metal panels during installation.
      2. FIELD CONDITIONS
         1. Unless directed otherwise, do not execute the Work of this Section unless the Director’s Representative is present.
         2. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.
      3. COORDINATION
         1. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.
      4. WARRANTY

007306 Supplementary Conditions - Warranty Extension must be edited by the Specifications Writer, and included in the Project Manual.

* + - * 1. Warranty Extension: The one year period required by Paragraph 9.8 of the General Conditions is extended to 2 years for the Work of this Section. Refer to Supplementary Conditions 007306.
        2. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

Failures include, but are not limited to, the following:

Structural failures including rupturing, cracking, or puncturing.

Deterioration of metals and other materials beyond normal weathering.

Warranty Period: Two years from date of Substantial Completion.

* + - * 1. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

Color fading more than 5 Delta E units when tested according to ASTM D2244.

Chalking in excess of a No. 8 rating when tested according to ASTM D4214.

Cracking, checking, peeling, or failure of paint to adhere to bare metal.

Finish Warranty Period: 20 <Insert number> years from date of Substantial Completion.

Insert requirements for special weathertightness warranty if needed. Panel manufacturers do not typically offer such warranties on wall systems.

1. PRODUCTS
   * + 1. PERFORMANCE REQUIREMENTS

Retain "Recycled Content" paragraph below to specify recycled content if required. An alternative method of requiring recycled content is to retain requirement in Project's Division 01 sustainable design requirements Section that gives Contractor the option and responsibility to determine how recycled content requirements will be met.

USGBC allows a default value of 25 percent to be used for steel without documentation; higher percentages can be claimed if they are supported by appropriate documentation. The Steel Recycling Institute indicates that steel sheet typically has 23 percent postconsumer recycled content and 1.5 percent preconsumer recycled content.

* + - * 1. [Recycled Content](http://www.arcomnet.com/sustainable_design.aspx?topic=30): Postconsumer recycled content plus one-half of preconsumer recycled content not less than <Insert value> percent.
        2. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

Wind Loads: As indicated on Drawings.

Other Design Loads: As indicated on Drawings.

Deflection Limits: For wind loads, no greater than 1/180 of the span.

Coordinate with drawing.

Uniform Siding Design Loads: The uniform load capacity of the siding and soffit systems shall safely resist a positive and negative load requirement listed in Zone 4 and Zone 5 as shown below.

Edit below as required. See structural engineer for information.

The Component and Cladding Chart shown on Drawing **<Insert Drawing Designation>** of the Contract Documents or Design Code: ASCE-7, Method 2 for Components and Cladding.

* + - * 1. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:

Value in first option in "Test-Pressure Difference" subparagraph below is equivalent to a 25-mph (40-km/h) wind and is ASTM E283 default. Products tested to value in second option below, equivalent to a 50-mph (80-km/h) wind, are widely available.

Test-Pressure Difference: **[1.57 lbf/sq. ft.] [6.24 lbf/sq. ft.]**.

ASTM E331 in "Water Penetration under Static Pressure" paragraph below indicates that "water contained within drainage flashings, gutters, and sills is not considered failure."

* + - * 1. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

Value in first option in "Test-Pressure Difference" subparagraph below is equivalent to a 34-mph (55-km/h) wind and is ASTM E331 default. Products tested to value in second option below, equivalent to a 50-mph wind (80-km/h), are widely available.

Test-Pressure Difference: **[2.86 lbf/sq. ft.] [6.24 lbf/sq. ft.]**.

* + - * 1. 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.

Temperature Change (Range): 200 deg F, ambient; 180 deg F, material surfaces.

Retain "Fire-Resistance Ratings" paragraph below only if products specified are part of a fire-resistance-rated assembly. Indicate rating, testing agency, and testing agency's design designation on Drawings.

* + - * 1. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

* + - 1. CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS
         1. Provide factory-formed metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners[**and factory-applied sealant**] inside laps. Include accessories required for weathertight installation.
         2. Creased-Rib-Profile, Concealed-Fastener Metal Wall Panels: Formed with raised, center-creased, trapezoidal major ribs; with reveal joint between panels.

Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792, Class AZ50 or AZ55 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755.

Nominal Thickness: 0.028 inch.

Exterior Finish: Two-coat fluoropolymer.

Color: As selected by Director’s Representative from manufacturer's full range.

Edit below as required.

Panel Profile: 3 inch deep with alternating high and low planes at 5 to 6 inches on center.

Panel Coverage: 16 inches.

Panel Length: Continuous with no end laps. Shop cut the bottom of the panel so the finished edge is straight and 90 degrees o the panel seams. Field cutting of the bottom edge is not acceptable.

Seam Design (Side joint): Interlocking side ribs.

* + - 1. MISCELLANEOUS MATERIALS
         1. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653, G90 coating designation or ASTM A792, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

Retain panel accessories, flashing, and trim as required and coordinate with those specified in Section 076200 "Sheet Metal Flashing and Trim."

* + - * 1. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.

Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

* + - * 1. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

Insert requirements for explosion-relief panels, including special fasteners, cables, and supports, if required. Verify availability with manufacturers.

* + - * 1. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
        2. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.

Type 3 Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311. Refer to Section 079200.

* + - 1. FABRICATION
         1. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

Retain "On-Site Fabrication" paragraph below to permit use of on-site, portable roll-forming equipment.

* + - * 1. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
        2. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

Retain first paragraph below if gaskets or sealants are factory installed.

* + - * 1. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
        2. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

Seams: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.

Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.

Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.

Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

* + - 1. FINISHES
         1. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
         2. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
         3. Steel Panels and Accessories:

Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

Retain one or both subparagraphs below.

Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.

Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

Retain subparagraph below with subparagraph above for systems that depend on air- or water-resistive barriers to prevent air infiltration or water penetration.

Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

* + - * 1. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
        2. Proceed with installation only after unsatisfactory conditions have been corrected.
      1. PREPARATION
         1. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.
      2. INSTALLATION
         1. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

Shim or otherwise plumb substrates receiving metal panels.

Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.

Install screw fasteners in predrilled holes.

Locate and space fastenings in uniform vertical and horizontal alignment.

Install flashing and trim as metal panel work proceeds.

Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.

Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.

Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

* + - * 1. Fasteners:

Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

* + - * 1. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
        2. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.

Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.

Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.

Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

Flash and seal panels with weather closures at perimeter of all openings.

Retain "Watertight Installation" paragraph below for hydrostatic (watertight) panel installation; delete for water-shedding panel installations.

* + - * 1. Watertight Installation:

Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.

Provide sealant or tape between panels and protruding equipment, vents, and accessories.

At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

* + - * 1. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

* + - * 1. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.

Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

* + - 1. FIELD QUALITY CONTROL

Retain "Testing Agency" paragraph below to identify who shall perform tests and inspections. If retaining second option below, retain "Field quality-control reports" paragraph in "Informational Submittals" Article.

* + - * 1. Testing Agency: **[Director’s Representative will engage] [Engage]** a qualified testing agency to perform tests and inspections.

Retain "Water-Spray Test" paragraph below to check system's resistance to water penetration. Revise indicated test-area requirements to suit Project.

* + - * 1. Water-Spray Test: After installation, test area of assembly **[shown on Drawings] [as directed by Architect] <Insert area>** for water penetration according to AAMA 501.2.

Retain "Manufacturer's Field Service" paragraph below to require a factory-authorized service representative to perform tests and inspections.

* + - * 1. Manufacturer's Field Service: Engage a Company Service Advisor to test and inspect completed metal wall panel installation, including accessories.
        2. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.
        3. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
        4. Prepare test and inspection reports.
      1. CLEANING AND PROTECTION
         1. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
         2. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
         3. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.13