SECTION 074293 - SOFFIT PANELS

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

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:

Metal soffit panels.

Refer to sections listed below for cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections. Sections listed below are for spec editor’s and design team coordination and are to remain as Editor’s Notes. Remove referenced specification sections within the body of the specification if not applicable to the project.

Section 074213.13 "Formed Metal Wall Panels" for lap-seam metal wall panels.

* + - 1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site
			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. 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.

Include manufacturer’s installation instructions.

* + - * 1. Sustainable Design Submittals:
				2. 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 flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

Retain "Samples for Initial Selection" and "Samples for Verification" paragraphs below for two-stage Samples.

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

Include similar Samples of trim and accessories involving color selection.

* + - * 1. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

* + - * 1. Quality Control Submittals:

Qualification Data: For Installer.

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

Sample Warranties: For special warranties..

* + - * 1. Contract Closeout Submittals

Maintenance Data: For metal panels to include in maintenance manuals.

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

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.

First subparagraph below is an example only; revise to suit Project.

Build Benchmarks of typical roof eave[, **including fascia**,] and soffit as shown on Drawings; approximately [**four panels wide] <Insert size**> by full eave width, including attachments and accessories.

Retain first subparagraph below if Benchmarks are not only for establishing appearance factors.

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

* + - 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.
				5. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.
			2. FIELD CONDITIONS
				1. 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 walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.
			4. WARRANTY

When warranties are required, verify with Director’s Representative that special warranties stated in this article are not less than remedies available to the Facility under prevailing local laws.

* + - * 1. 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.

Verify available warranties and warranty periods for metal panels.

Warranty Period: [**Two] <Insert number**> 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.

Usually retain "Exposed Panel Finish" subparagraph below for fluoropolymer or siliconized-polyester finishes; verify availability with manufacturer.

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.

Verify available warranties for metal panel finishes and insert number in "Finish Warranty Period" subparagraph below. A 20-year period is available for fluoropolymer finish and is the maximum included with manufacturers' published data; a 10-year period is usually available for siliconized polyester. Longer periods for premium finishes may be available.

Finish Warranty Period: [**20] [10] <Insert number**> years from date of Substantial Completion.

Insert requirements for special weathertightness warranty if needed; metal panel manufacturers do not typically offer such warranties.

1. PRODUCTS

Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications. For definitions of terms and requirements for Contractor's product selection.

* + - 1. PERFORMANCE REQUIREMENTS
				1. 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] <Insert loads**>.

Deflection Limits: For wind loads, no greater than [**1/180] [1/240] <Insert deflection**> of the span.

<**Insert serviceability requirements**>.

Revise rate of air leakage in "Air Infiltration" paragraph below to suit Project.

* + - * 1. Air Infiltration: Air leakage of not more than [**0.06 cfm/sq. ft.] <Insert rate**> 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 wind and is ASTM E283 default. Products tested to value in second option below, equivalent to a 50-mph wind, are widely available. Revise to suit Project.

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 wind and is ASTM E331 default. Products tested to value in second option below, equivalent to a 50-mph wind, are widely available. Revise to suit Project.

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.

Differential values (for aluminum in particular) in "Temperature Change (Range)" subparagraph below are suitable for most of the U.S.; revise to suit Project.

Temperature Change (Range): [**120 deg F, ambient; 180 deg F, material surfaces] <Insert temperature range**>.

* + - 1. METAL SOFFIT PANELS

Some metal soffit panels can be used for fasciae, mansards, and equipment screens, as well as for soffits; verify applications with manufacturers.

* + - * 1. Provide metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
				2. Metal Soffit Panels: Match profile and material of metal [**wall] [roof**] panels.

Finish: [**Match finish and color of metal wall panels] [Match finish and color of metal roof panels] [As indicated on Drawings**].

Retain "Sealant" subparagraph below if required. Verify availability with manufacturers.

Sealant: Factory applied within interlocking joint.

Retain "Metal Soffit Panels" paragraph above or one or more metal soffit panel paragraphs below. Delete paragraphs below if retaining paragraph above.

Copy paragraphs below and re-edit for each product.

Insert drawing designation for each product required. Use these designations on Drawings to identify each product.

* + - * 1. Flush-Profile Metal Soffit Panels <**Insert drawing designation>: [Solid] [Perforated**] panels formed with vertical panel edges and [**intermediate stiffening ribs symmetrically spaced] [a flat pan**] between panel edges; with flush joint between panels.

Material: Same material, finish, and color as metal [**wall] [roof**] panels.

Retain "Material" subparagraph above or one of four sheet subparagraphs below.

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 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755.

Nominal Thickness: [**0.022 inch] [0.028 inch] [0.034 inch] [0.040 inch] [0.052 inch**].

Exterior Finish: [**Two-coat fluoropolymer] [Three-coat fluoropolymer] [Mica fluoropolymer] [Metallic fluoropolymer] [FEVE fluoropolymer] [Siliconized polyester] <Insert finish**>.

Color: [**As indicated by manufacturer's designations] [Match Director’s Representative’s samples] [As selected by Director’s Representative from manufacturer's full range] <Insert color**>.

Aluminum Sheet: Coil-coated sheet, ASTM B209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

Thickness: [**0.032 inch] [0.040 inch**].

Surface: [**Smooth, flat] [Embossed**] finish.

Exterior Finish: [**Two-coat fluoropolymer] [Three-coat fluoropolymer] [Mica fluoropolymer] [Metallic fluoropolymer] [FEVE fluoropolymer] [Siliconized polyester] [Clear anodized] [Color anodized] <Insert finish**>.

Color: [**As indicated by manufacturer's designations] [Match Director’s Representative’s samples] [As selected by Director’s Representative from manufacturer's full range] <Insert color**>.

Stainless Steel Sheet: ASTM A240, [**Type 304] [Type 316**], fully annealed.

Nominal Thickness: [**0.0188 inch] [0.0250 inch] [0.0313 inch] [0.0375 inch] [0.0500 inch**].

Exterior Finish: **[ASTM A480 No. 4] [ASTM A480 No. 2B] <Insert finish>**.

Copper Sheet: ASTM B370, cold-rolled copper sheet, H00 temper.

Thickness: **[16 oz./sq. ft.] [20 oz./sq. ft.]**.

Exposed Finish: **[Mill] [Prepatinated]**.

Delete "Prepatinated Color" subparagraph below if retaining mill (natural finish) in "Exposed Finish" subparagraph above; Verdigris is the light-green color of fully aged copper.

Prepatinated Color: **[Dark brown] [Verdigris] <Insert color>**.

Panel Coverage: **[8 inches] [12 inches] [16 inches] [20 inches] <Insert dimension>**.

Panel Height: **[0.875 inch] [1.0 inch)] [1.5 inches] [3.0 inches] <Insert dimension>**.

* + - * 1. Reveal-Joint-Profile Metal Soffit Panels **<Insert drawing designation>: [Solid] [Perforated]** panels formed with vertical panel edges and **[intermediate stiffening ribs symmetrically spaced] [a flat pan]** between panel edges; with recessed reveal joint between panels.

Material: Same material, finish, and color as metal **[wall] [roof]** panels.

Retain "Material" subparagraph above or one of four sheet subparagraphs below.

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 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755.

Nominal Thickness: **[0.022 inch] [0.028 inch] [0.034 inch] [0.040 inch] [0.052 inch]**.

Exterior Finish: **[Two-coat fluoropolymer] [Three-coat fluoropolymer] [Mica fluoropolymer] [Metallic fluoropolymer] [FEVE fluoropolymer] [Siliconized polyester] <Insert finish>**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative’s samples] [As selected by Director’s Representative from manufacturer's full range] <Insert color>**.

Aluminum Sheet: Coil-coated sheet, ASTM B209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

Thickness: **[0.032 inch] [0.040 inch]**.

Surface: **[Smooth, flat] [Embossed]** finish.

Exterior Finish: **[Two-coat fluoropolymer] [Three-coat fluoropolymer] [Mica fluoropolymer] [Metallic fluoropolymer] [FEVE fluoropolymer] [Siliconized polyester] [Clear anodized] [Color anodized] <Insert finish>**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative’s samples] [As selected by Director’s Representative from manufacturer's full range] <Insert color>**.

Stainless Steel Sheet: ASTM A240, **[Type 304] [Type 316]**, fully annealed.

Nominal Thickness: **[0.0188 inch] [0.0250 inch] [0.0313 inch] [0.0375 inch] [0.0500 inch]**.

Exterior Finish: **[ASTM A480 No. 4] [ASTM A480 No. 2B] <Insert finish>**.

Copper Sheet: ASTM B370, cold-rolled copper sheet, H00 temper.

Thickness: **[16 oz./sq. ft.] [20 oz./sq. ft.]**.

Exposed Finish: **[Mill] [Prepatinated]**.

Delete "Prepatinated Color" subparagraph below if retaining mill (natural finish) in "Exposed Finish" subparagraph above; Verdigris is the light-green color of fully aged copper.

Prepatinated Color: **[Dark brown] [Verdigris] <Insert color>**.

Panel Coverage: **[8 inches] [12 inches] [16 inches] [20 inches] <Insert dimension>**.

Panel Height: **[0.75 inch] [1.0 inch] [1.5 inches] <Insert dimension>**.

* + - * 1. V-Groove-Profile Metal Soffit Panels **<Insert drawing designation>: [Solid] [Perforated]** panels formed with vertical panel edges and **[intermediate stiffening ribs symmetrically spaced] [a flat pan]** between panel edges; with a V-groove joint between panels.

Material: Same material, finish, and color as metal [wall] [roof] panels.

Retain "Material" subparagraph above or one of four sheet subparagraphs below.

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 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755.

Nominal Thickness: **[0.022 inch] [0.028 inch] [0.034 inch] [0.040 inch] [0.052 inch]**.

Exterior Finish: **[Two-coat fluoropolymer] [Three-coat fluoropolymer] [Mica fluoropolymer] [Metallic fluoropolymer] [FEVE fluoropolymer] [Siliconized polyester] <Insert finish>**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative’s samples] [As selected by Director’s Representative from manufacturer's full range] <Insert color>**.

Aluminum Sheet: Coil-coated sheet, ASTM B209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

Thickness: **[0.032 inch] [0.040 inch]**.

Surface: **[Smooth, flat] [Embossed]** finish.

Exterior Finish: **[Two-coat fluoropolymer] [Three-coat fluoropolymer] [Mica fluoropolymer] [Metallic fluoropolymer] [FEVE fluoropolymer] [Siliconized polyester] [Clear anodized] [Color anodized] <Insert finish>**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative’s samples] [As selected by Director’s Representative from manufacturer's full range] <Insert color>**.

Stainless Steel Sheet: ASTM A240, **[Type 304] [Type 316]**, fully annealed.

Nominal Thickness: **[0.0188 inch] [0.0250 inch] [0.0313 inch] [0.0375 inch] [0.0500 inch]**.

Exterior Finish: **[ASTM A480 No. 4] [ASTM A480 No. 2B] <Insert finish>**.

Copper Sheet: ASTM B370, cold-rolled copper sheet, H00 temper.

Thickness: **[16 oz./sq. ft.] [20 oz./sq. ft.]**.

Exposed Finish: **[Mill] [Prepatinated]**.

Delete "Prepatinated Color" subparagraph below if retaining mill (natural finish) in "Exposed Finish" subparagraph above; Verdigris is the light-green color of fully aged copper.

Prepatinated Color: **[Dark brown] [Verdigris] <Insert color>**.

Panel Coverage: **[6 inches] [12 inches] [14 inches] <Insert dimension>**.

Panel Height: **[0.375 inch] [0.44 inch] [0.50 inch] [0.625 inch] <Insert dimension>**.

* + - 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, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

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. Finish flashing and trim with same finish system as adjacent metal panels.
				2. 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.
				3. Panel Sealants: Provide sealant types 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.

Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

* + - 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 for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

Seams for Other Than Aluminum: 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 soffit 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:

Retain one fluoropolymer or siliconized-polyester finish from subparagraphs below. Verify availability of finishes for products specified. If retaining more than one, indicate location of each on Drawings or by inserts. To obtain a proprietary finish system, insert names of coating manufacturers and products.

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 **[ for seacoast and severe environments]**.

Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions **[ for seacoast and severe environments]**.

Mica Fluoropolymer: AAMA 621. Two-coat fluoropolymer finish with suspended mica flakes 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 **[ for seacoast and severe environments]**.

Metallic Fluoropolymer: AAMA 621. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions**[ for seacoast and severe environments]**.

FEVE Fluoropolymer: AAMA 621. Two-coat fluoropolymer finish containing 100 percent fluorinated ethylene vinyl ether (FEVE) resin in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.

Finish in "Concealed Finish" subparagraph below is frequently used as a factory finish for interior surfaces.

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. Aluminum Panels and Accessories:

Retain one fluoropolymer, siliconized-polyester, or anodized finish from subparagraphs below. Verify availability of finishes for products specified. If retaining more than one, indicate location of each on Drawings or by inserts. To obtain a proprietary finish system, insert names of coating manufacturers and products.

Revise or insert additional testing requirements in five fluoropolymer subparagraphs below if performance levels indicated in AAMA 2605 are insufficient.

Two-Coat Fluoropolymer: AAMA 2605. 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**[ for seacoast and severe environments]**.

Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions**[ for seacoast and severe environments]**.

Mica Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish with suspended mica flakes 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**[ for seacoast and severe environments]**.

Metallic Fluoropolymer: AAMA 2605. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions**[ for seacoast and severe environments]**.

FEVE Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish containing 100 percent fluorinated ethylene vinyl ether (FEVE) resin in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.

Exposed Anodized Finish:

Retain one of two options in "Clear Anodic Finish" subparagraph below. Class I finish is heavy anodized. Verify availability with manufacturers.

Clear Anodic Finish: AAMA 611, **[AA-M12C22A41, Class I, 0.018 mm] [AA-M12C22A31, Class II, 0.010 mm]** or thicker.

Retain one of two options in "Color Anodic Finish" subparagraph below. Verify availability with manufacturers.

Color Anodic Finish: AAMA 611, **[AA-M12C22A42/A44, Class I, 0.018 mm] [AA-M12C22A32/A34, Class II, 0.010 mm]** or thicker.

* + - * 1. Stainless Steel Panels and Accessories:

Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

Retain "Polished Finishes" or "Bright, Cold-Rolled, Unpolished Finish" subparagraph below.

Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

Run grain of directional finishes with long dimension of each piece.

When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

Directional Satin Finish: ASTM A480 No. 4.

Bright, Cold-Rolled, Unpolished Finish: ASTM A480 No. 2B.

Retain "Copper Panels and Accessories" for prepatinated copper panels; delete if retaining only mill finish.

* + - * 1. Copper Panels and Accessories:

Prepatination: Factory prepatinate according to ASTM B882 to convert the copper surface to an inorganic crystalline structure with the appearance and durability of naturally formed patina.

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 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 panel manufacturer.

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

Retain subparagraph below with paragraph 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 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.

Furring channels in "Soffit Framing" subparagraph below must be wire tied to supports in most fire-resistance-rated assemblies. Verify requirements of assemblies and revise subparagraph to suit Project.

Soffit Framing: Wire tie**[ or clip]** furring channels to supports**[, as required to comply with requirements for assemblies indicated]**.

* + - 1. 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.

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.

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

Copper Panels: Use copper, stainless steel, or hardware-bronze fasteners.

Stainless Steel Panels: Use stainless steel fasteners.

* + - * 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.

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.

Retain "Watertight Installation" paragraph below for hydrostatic (watertight) panel installation; delete for perforated panel installations or if not required.

* + - * 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, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal 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 to 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 waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

* + - 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 074293