SECTION 10 73 17

MANUFACTURED CANOPY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Pre-engineered Manufactured extruded aluminum canopy including framing, reinforcing, structural anchors, integral gutters and drains, attachments, fascia components, and metal ceilings and accessories.

1.2 SUBMITTALS

A. Product Data: Technical data including material descriptions, fabrication methods, dimensions of individual components, and finishes.

B. Shop Drawings: Submit plans; elevations; sections, details, and attachments to other work. Canopy supplier shall furnish complete canopy drawings signed and sealed by a professional engineer licensed in the state where the canopy shall be installed.

1. Anchor Rod Plans: Submit anchor rod plans and templates prior to fabrication of Concrete panels and design of Cold Formed Steel Framing and Insulated Metal Panels.
    a. Indicate dimensions related to wall construction, all reinforcing, blocking and stiffeners, anchorage details, and locations of support rods.
2. Include location, diameter, and minimum required projection of anchor rods required to attach canopy to structural components.
3. Framing Drawings: Show complete fabrication of canopy framing. Indicate welds, anchorages and bolted connections.
4. Include section module of wind loadbearing members, calculations for stresses and deflections under design loading.

C. Samples: Submit 12 inch (305 mm) long section with finish of aluminum canopy in thickness indicated. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.

D. Delegated Design Submittal: Submit analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

A. Certificates and Reports:

1. Welding certificates.
2. Mill certificates.
3. Research/Evaluation Reports: ICC-ES reports for post installed anchors.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Welding: Qualify procedures and personnel according to the following:
      a. AWS D1.1/D1.1M Structural Welding Code - Steel.
      b. AWS D1.2/D1.2 M Structural Welding Code - Aluminum.
      c. AWS D1.6/D1.6M Structural Welding Code - Sheet Steel.
      d. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

B. Manufacturer's Qualifications: Company specializing in engineering and manufacturing pre-engineered canopies with a minimum documented experience of twenty years and with a quality assurance program utilizing a quality inspection for each system.

C. Installer Qualifications: Entity having minimum five years documented experience current and valid training certification or other authorization for installations by manufacturer.

D. Source Limitations: Obtain exterior manufactured canopy and components from a single manufacturer.

E. Product Options:
   1. Information on the Drawings and in the Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance. Do not modify intended aesthetic effects, as judged solely by the Architect, except with the Architect's approval. If modifications are proposed, submit comprehensive explanatory data to the Architect for review.
   2. The Drawings indicate size, profiles, and dimensional requirements of pre-engineered manufactured canopies and are based on the specific system indicated. Do not modify intended aesthetic effects, as judged solely by the Architect, except with the Architect's approval. If modifications are proposed, submit comprehensive explanatory data to the Architect for review.

1.5 COORDINATION

A. Coordinate sizes and locations of concrete anchor rod inserts into concrete panels.

B. Coordinate sizes and locations of in wall supports, blocking and other reinforcing with cold formed steel framing and insulated metal panel system. All loads imposed on other delegated design systems shall be reviewed and approved by the qualified engineers of the cold formed steel framing and insulated metal panel systems.

C. Coordinate canopy assemblies with all drainage components and Work, flashing, trim, fascia, soffits and construction of supports and adjoining work to provide a leakproof, and noncorrosive installation.

D. Supply inserts and anchoring devices for building into concrete and instruct other trade of proper location and position.

E. The Contractor shall conduct site meetings to verify Project requirements, substrate conditions, utility connections, manufacturer's drawings and installation instructions. Comply with Division 1 section on project meetings.

F. The contractor shall prepare for and pour the concrete footers for the pre-engineered metal canopies. Manufacturer shall furnish recommended footing drawings as per IBC Section 1807.3 and prints and rebar details for concrete footings, as well as provide anchor bolts to be embedded in concrete footer. Such items shall be delivered to project site in time for installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver canopy components to prevent damaged or deformation. Package metal canopy for protection during transportation and handling.

B. Unload, store, and erect metal canopy components to prevent bending, warping, twisting, and surface damage.

C. Set metal canopy horizontally on platforms or pallets, covered with weathertight and ventilated covering. Store to ensure dryness, with positive slope for drainage of water. Do not store metal canopy in contact with materials that stain, dent, or cause surface damage.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify location and elevation of footings relative to finished grade, columns, and adjacent construction contiguous with manufactured canopy by field measurements before fabrication and indicate measurements on shop drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating metal canopies without field measurements.

1.8 WARRANTY

A. Metal Canopy Finishes: Written warranty signed by manufacturer in which manufacturer agrees to repair finish or replace metal canopy components that show evidence of deterioration of factory applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
   a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
   b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
   c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design metal canopy system.

1. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice and licensed in the state and jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.

B. Structural Performance: Metal canopy shall withstand the effects of gravity loads and the indicated loads and stresses within limits and under conditions indicated.

1. Design Loads: As Indicated on the Drawings.
2. Wind Loads: As Indicated on the Drawings.
3. Wind Loads: As indicated on the Drawings. Determine wind loads on minimum design pressures indicated as applicable to canopies:
   a. Minimum Uniform Pressure: 50 lbf/sq ft, acting inward or outward (standard).
   b. Minimum Wind Load:
      1) Buildings: 120 mph, Exposure C.
      2) Shelters: 90 mph.
4. Snow and other Loads: as required by Code but no less than 50 lbf/sq.ft..

C. Seismic Performance: Canopy capable of withstanding the effects of earthquake motions determined according to ASCE/SEI 7.

D. 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.

1. Temperature Change: 120 degrees F (67 degrees C), ambient; 180 degrees F (100 degrees C), material surfaces.

E. Electrical Devices: Devices UL listed with wiring bearing UL classification and conforming to the current NEC,

F. FM Global Listing: Provide metal canopy component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global Approval Guide for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification: Class 1A-90.
2. Hail Resistance: VSH.

2.2 HANGING CANOPIES

A. Description: Flat canopy with supporting hanging rods.

B. Basis-of-Design Product: Subject to compliance with requirements, provide MAPES Industries, Inc.; Super Lumideck Hanger Rod Canopies, or comparable product by one of the following:

1. Austin Mohawk and Company, Inc.
2. Avadek, Inc.
3. InPro, Custom Shade Solutions.
4. Peachtree Protective Covers

2.3 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish specified

1. Aluminum Extrusions: ASTM B 221, alloy 6063-T5 or T-52
   a. Thickness: Thickness necessary to comply with design calculations.
2. Aluminum Sheet: ASTM B 209, alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.
3. Aluminum Castings: ASTM B 26/B 26M, alloy 319.

B. Cold Rolled Steel Sheet: ASTM A 1008/A, Commercial Steel (CS), Type B.

C. Zinc Coated (Galvanized) Steel Sheet: ASTM A 653/A, commercial quality, G90 (Z275) coating designation; mill phosphatized.

D. Steel Tubing: ASTM A 513, welded steel mechanical tubing.

E. Gutter and Fascia: Extruded aluminum alloy 6063-T6 0.125 inch (3 mm) thick, nominal 3 inch style, fascia and gutter beam.

F. Framing: Extruded aluminum channel beams for structural support and conductance for rain water, sized to comply with design calculations.

G. Fasteners: Provide 300 series stainless steel, Type 304 unless otherwise indicated. Do not use metals incompatible with joined materials.

1. Select fasteners for type, grade, and class required to meet Performance Requirements.
2. Use type and size suitable for installation conditions.
3. Use Phillips flat head screws for exposed fasteners, unless otherwise indicated.

H. Anchors and Inserts: Stainless steel, of type and size required for loading and installation indicated.

I. Hanger rods and attachment hardware shall be powder coated to match canopy.

J. Bituminous Paint: Cold applied asphalt mastic complying with SSPC-Paint 12 but containing no asbestos fibers, or cold applied asphalt emulsion complying with ASTM D 1187.

2.4 FABRICATION

A. Configuration: Refer to Drawings.

B. Provide factory formed metal canopy designed for standing seam deck panel mechanically attached to supports using concealed clips in side laps. Include rain drainage, accessories, and necessary clips, cleats, pressure plates, and similar items.

C. Metal Canopy Deck: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and snapping panels together.

1. Aluminum Sheet: Coil coated sheet, ASTM B 209 (ASTM B 209M), alloy and final thicknesses as indicated by design calculations, with temper as required to suit forming operations and structural performance required.
   a. Thickness: 0.040 inch (1.02 mm) minimum.
   b. Surface: Smooth, flat finish.
   c. Finish: Two coat fluoropolymer.
   d. Color: Selected by Architect.
2. Clips: One piece fixed to accommodate thermal movement.
   a. Material: 0.062 inch (1.59 mm)] thick, stainless steel sheet.

2.5 FINISHES

A. Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designating finishes.

B. Aluminum Finishes: Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.

1. Two Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent 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.
2. Color and Gloss: Selected by Architect.
3. Apply a coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

C. Steel Panels and Accessories:

1. Concealed Steel Items: Galvanized in accordance with ANSI/ASTM A 123 to 2.0 oz/sq.ft.
2. Hanger rods and attachment hardware shall be powder coated to match canopy.

D. Fasteners: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances, metal canopy supports, and conditions affecting performance of the work.
   1. Examine framing to verify that angles, channels, studs, and structural panel support members and anchorage have been installed within alignment tolerances required by manufacturer.
   2. Examine canopy deck panels to verify that joints are supported by framing or blocking and that installation is within flatness tolerances required by manufacturer.

B. Examine embedded supports for components and system to verify actual locations of penetrations relative to seam locations of metal canopy before installation.

C. Proceed with installation after correcting unsatisfactory conditions.

3.2 INSTALLATION

A. Install metal canopy in accordance with manufacturer’s written instructions on prepared concrete foundations and slabs.

B. Install metal canopy plumb and level. Anchor metal canopy and components securely in place, with provisions for thermal and structural movement.
   1. Flash and seal metal canopy at perimeter of all openings. Fasten with self tapping screws.
   2. Install screw fasteners in predrilled holes.
   3. Locate and space fastenings in uniform vertical and horizontal alignment.
   4. Flashing, Trim, and Rain Drainage: Install in accordance with SMACNA Architectural Sheet Metal Manual. Install work with laps, joints, and seams that are permanently watertight
      a. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection.

C. Fasteners:
   1. Aluminum Panels: Use aluminum or stainless steel fasteners.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Lap Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by canopy manufacturer.
   1. 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.

3.3 ADJUSTING, CLEANING, AND PROTECTING

A. Remove temporary protective coverings and strippable films, if any, as metal canopy is installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, clean finished surfaces as recommended by metal canopy manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal canopy components damaged or deteriorated beyond repair.

END OF SECTION