

SECTION 09520

METAL PANEL CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Suspended Snap-In Metal Panel Ceiling System.
- B. Suspended Lay-In Metal Panel Ceiling System.
- C. Positive-Fastened Metal Panel Ceiling System.
- D. Suspension Systems and Trim.

1.2 RELATED SECTIONS

- A. Section 09260 - Gypsum Board Assemblies.
- B. Section 09511 - Suspended Acoustical Ceilings.
- C. Section 14201 - Passenger Elevators.
- D. Section 15840 - Air Terminal Units.
- E. Section 16510 - Interior Luminaires.

1.3 REFERENCES

- A. AA DAF-45 - Designation System for Aluminum Finishes; Aluminum Association (AA).
- B. AAMA 605.2 - Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
- C. AAMA 606.1 - Voluntary Guide Specification and Inspection Methods for Integral Color Anodic Finishes for Architectural Aluminum.
- D. AAMA 607.1 - Voluntary Guide Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
- E. AAMA 608.1 - Voluntary Guide Specification and Inspection Methods for Electrolytically-Deposited Color Anodic Finishes for Architectural Aluminum.
- F. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

- G. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
- H. ASTM D 1730 - Standard Practices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting.
- I. DIN 50939 - Protection Against Corrosion; Chromating of Aluminum, Directives, Symbols, and Methods of Test; Deutsches Institut für Normung.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's descriptive literature, specifications, installation instructions, and recommendations, for each component and finish.
- C. Shop Drawings: Indicate the following:
 - 1. Reflected ceiling plans; show locations of ceiling-mounted items, and points of suspension.
 - 2. Field measurements of construction over which enclosures will be installed, with notation of dimensions which vary significantly from the Contract Documents.
 - 3. Details of interface with dissimilar and restraining materials, project-specific conditions, ceiling-mounted items, perimeter conditions, moldings, and trim.
 - 4. Scale: 1/4 inch to 1 foot (1:50).
- D. Selection Samples: Two sets, representing manufacturer's full range of available materials and finishes.
- E. Verification Samples: Two samples of each type panel and related component which will be exposed in the finished Work, representing actual material and finish of products to be installed; minimum size for panels 24 inches (610 mm) square, minimum size for linear components 24 inches (610 mm) long.
- F. Installer's qualifications.
- G. Manufacturer's printed installation instructions for metal panel ceiling components; include component storage requirements.

- H. Manufacturer's written instructions for maintenance of materials and finishes.

1.5 QUALITY ASSURANCE

- A. Designer's Qualifications: Structural engineer licensed to practice in the State in which the project is located.
- B. Manufacturer Qualifications: Minimum five years documented experience producing metal panel ceilings similar to those specified in this section.
 - 1. Maintaining an in-house quality assurance program that documents panel dimensions, corners, and alignment.
 - 2. Having sufficient capacity to produce required units within project time requirements.
- C. Installer Qualifications: Minimum five years documented experience installing metal panel ceilings similar to those specified in this section, and approved by manufacturer.
- D. Mock-Up: Construct mock-up using materials specified in this section.
 - 1. Construct mock-up at locations indicated or directed, and as follows:
 - a. Size: ___ feet by ___ feet (___ mm by ___ mm).
 - b. Include panels, reveals if any, indicated accessories, fasteners, and anchors.
 - 2. Obtain Architect's acceptance of mock-up before beginning construction activities of this section; accepted mock-up will be standard by which completed construction activities of this section is judged.
 - 3. Mock-up may not remain as part of Work.
 - 4. Accepted mock-up may remain as part of Work.
- E. Pre-Installation Meeting: Convene at job site seven calendar days prior to scheduled beginning of construction activities of this section to review requirements of this section.
 - 1. Require attendance by representatives of the following:
 - a. Installer of this section.
 - b. Other entities directly affecting, or affected by, construction activities of this section.
 - 2. Notify Architect four calendar days in advance of scheduled meeting date.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store components in manner to prevent bending, warping, twisting, and surface damage.
- B. Deliver and store components of this section in manufacturer's unopened packaging until installation.
- C. Store components off ground/floor on skids; protect against warpage, scratches, damage from moisture, exposure to direct sunlight, and other surface contamination until installation.

1.7 WARRANTY

- A. Manufacturer's Warranty: Metal ceiling panel manufacturer's five-year warranty against defects in product materials and fabrication.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Metalwerks Division, Metal Sales and Service, Inc., P.O. Box 637, Kennett Square, PA 19348. ASD. Tel: (800) 321-7816.
- B. Requests for substitution will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted.
- D. Supply all components specified in this section from the same manufacturer.

2.2 METAL PANEL CEILING

- A. Metal Panel Ceilings - Performance Requirements:
 - 1. Deflection: Maximum $1/360$ of clear span under imposed loads, including air terminal units, luminaires, and other indicated ceiling-mounted items.
 - 2. Load design: Ensure ceiling-mounted items will not induce eccentric loads; where such items may induce rotation of ceiling system components, provide stabilizing reinforcement.
 - 3. Include provisions for structural movement without adversely affecting metal panel ceiling system appearance or performance.

- B. Metal Panel Ceiling: Metalwerks Concept 2000 system; shop-fabricated and assembled from metal panels, complete with all connections, supports, and anchors, with dimensions based on actual field measurements and coordinated with adjacent work.
1. Type: SN2000 snap-in type panels, downward acting, removable at any point in the ceiling, with continuous bead four sides; in narrow-style tee-bar system of same material as panel material, profile to accommodate panel edges, and finish matching panel finish, unless otherwise indicated.
 2. Type: SU2000 lay-in panel type, upward acting, removable at any point in the ceiling, with continuous flange four sides; in special "J"-channel shaped overlap suspension system of same material and finish as panel, unless otherwise indicated.
 3. Type: SC2000 positive-fastening type removable panels, in suspension system as required by manufacturer; panels capable of being formed to radius.
 4. Profiles: Indicated on drawings.
 5. Panel size: Width __ inches (__ mm); length __ inches (__ mm).
 6. Panel size: As indicated on drawings.
 7. Panel radius: __ inches (__ mm).
 8. Panel radius: As indicated on drawings.
 9. Exposed components: Fabricated from materials selected for surface flatness, smoothness, and freedom from surface blemishes.
- C. Panels: Stainless steel sheet.
1. Sheet thickness: 20 gage (0.9 mm).
 2. Sheet thickness: 18 gage (1.2 mm).
 3. Sheet thickness: 16 gage (1.5 mm).
 4. Sheet thickness: 14 gage (1.9 mm).
 5. Sheet thickness: 13 gage (2.3 mm).
 6. Sheet thickness: 12 gage (2.7 mm).
 7. Sheet thickness: 11 gage (3.0 mm).
 8. Finish: Number 4 brushed finish.
 9. Finish: Number 6 finish.
 10. Finish: Number 8 mirror finish.
 11. Finish: Number 2B mechanical finish.
 12. Perforations: Match perforation size and pattern of approved sample.

- D. Panels: Aluminum sheet, with strength and durability not less than that for ASTM B 209/ASTM B 209M, alloy 5005, temper H15.
1. Sheet thickness: Minimum 0.040 inch (1.0 mm).
 2. Sheet thickness: Minimum 0.050 inch (1.3 mm).
 3. Sheet thickness: Minimum 0.063 inch (1.6 mm).
 4. Sheet thickness: Minimum 0.080 inch (2.0 mm).
 5. Sheet thickness: Minimum 0.125 inch (3.1 mm).
 6. Finish: Fluoropolymer coating.
 7. Finish: Polyester powder coating.
 8. Finish: Clear anodic finish, AA-M12C22A31, nonspecular as fabricated mechanical finish, chemically etched medium matte, with AAMA 607.1 Class II clear coating 0.010 mm or thicker.
 9. Finish: Clear anodic finish, AA-M12C22A41, nonspecular as fabricated mechanical finish, chemically etched medium matte, with AAMA 607.1 Class I clear coating 0.018 mm or thicker.
 10. Finish: Color anodic finish, AA-M12C22A32, nonspecular as fabricated mechanical finish, chemically etched, medium matte, with AAMA 606.1 or 608.1 Class II integrally colored or electrolytically deposited color coating 0.010 mm or thicker.
 11. Finish: Color anodic finish, AA-M12C22A34, nonspecular as fabricated mechanical finish, chemically etched, medium matte, with AAMA 606.1 or 608.1 Class I integrally colored or electrolytically deposited color coating 0.018 mm or thicker.
 12. Color: _____.
 13. Color: Selected from full range of manufacturer's standard colors.
 14. Color: Match Architect's sample.
 15. Perforations: Match perforation size and pattern of approved sample.

2.3 MATERIALS

- A. Fluoropolymer Coating Finish: Polyvinylidene fluoride three-coat coating system, applied by coater certified by coating manufacturer, conforming to AAMA 605.2, and as follows:
1. Pretreatment: Chemical etch with cleaner specified by coating manufacturer.
 2. Primer: Acid-resistant primer coating specified by coating manufacturer; dry film thickness range 0.2 to 0.3 mils (0.005 to 0.007 mm).

3. Color Coat: Containing minimum 70 percent polyvinylidene resin by weight; Kynar 500(R) or Hylar 5000(R); dry film thickness of 0.8 to 1.2 mils (0.02 to 0.03 mm).
 4. Top Coat: Clear top coating containing minimum 70 percent polyvinylidene resin by weight; minimum dry film thickness of 0.8 mils (0.02 mm).
- B. Polyester Powder Coating Finish: Manufacturer's standard electrostatically- or spray-applied polyester powder coating system as follows:
1. Multi-stage pretreatment process in accordance with ASTM D 1730, Type B, method 5 or 7, and DIN 50939.
 2. Finish coat: One coat commercial-grade polyester powder coating.
 3. Second finish coat: Additional coat commercial-grade polyester powder coating.
 4. Total coating thickness: 2.5 to 3.5 mils (0.06 to 0.08 mm) dry film thickness on panel face; 3.5 to 5 mils (0.08 to 0.12 mm) dry film thickness on panel edges and corners.
- C. Wall and Interface Moldings: Same material as panel material, profiles as indicated, and finish matching panel finish, unless otherwise indicated.
- D. Attachments and Secondary Suspension Accessories: As required to provide complete system; formed galvanized steel, extruded aluminum, or structural steel shapes.
- E. Sound Absorbing Pads: Glass fiber, 1 inch (25 mm) thick, wrapped in PVC sheet, factory installed.

2.4 FABRICATION

- A. Fabricate components to profiles and sizes indicated on approved shop drawings.
- B. Apply protective masking to surfaces which will be exposed in finished work; ensure that masking materials, including adhesive, will not adversely affect appearance of components.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Review the shop drawings and verify field conditions:
 - 1. Verify that dimensions of locations to receive metal panel ceilings are in accordance with approved shop drawings.
 - 2. Verify that substrates to receive metal panel ceilings are prepared for installation of metal panel ceiling.
 - 3. Verify that above-ceiling construction activities in locations to receive metal panel ceilings are complete.
- B. Do not permit construction activities of this section to begin in an area until above-ceiling construction activities in that area are completed.

3.2 INSTALLATION

- A. Install components of metal panel ceiling systems in accordance with approved shop drawings and manufacturer's instructions.
- B. Framing:
 - 1. Install to achieve indicated ceiling height after above-ceiling construction activities are complete; coordinate location of hangers with construction activities of related sections.
 - 2. Space hangers to achieve specified deflection limits; anchoring securely to substrates.
 - 3. Laterally brace suspension system, if required.
 - 4. Install main runners independent of walls, columns, and other above-ceiling items.
 - 5. Space main runners maximum 48 inches (1220 mm) on center, and 6 inches (150 mm) from wall surfaces; butt splices and install lap strips as indicated.
 - 6. Attach main runners to hangers to prevent turning or twisting, and to transmit full loads to hangers.
- C. Installation Tolerances: Variation from horizontal or indicated slope of 1/8 inch in 8 feet (3.9 mm in 3 m), maximum.
- D. Coordinate installation of fixtures and equipment to be installed in ceiling system.

3.3 CLEANING

- A. After removing factory-applied masking, clean exposed surfaces using materials and methods specified in manufacturer's instructions.

3.4 PROTECTION

- A. Protect installed components from damage to finish or function by subsequent construction activities; do not remove factory-applied masking from components until time of Substantial Completion.
- B. Repair damaged components and finishes, if any, in accordance with manufacturer's recommendations; replace components which cannot be repaired to Architect's acceptance.

3.5 OWNER-PERSONNEL INSTRUCTION

- A. Instruct Owner's personnel in the care and maintenance of ceiling system.

END OF SECTION