

**SECTION 09 51 00
ACOUSTICAL CEILINGS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 REFERENCES

- A. ASTM C635/C635M – Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- B. ASTM A641/A641M Standard Specification for Zinc Coated (Galvanized) Carbon Steel Wire
- C. ASTM C636/C636M – Standard Practice for the Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
- D. ASTM C665 – Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
- E. ASTM E84 – Standard Test Method for Burning Characteristics of Building Materials
- F. ASTM E795 – Standard Practices for Mounting Test Specimens During Sound Absorption Tests
- G. ASTM E1264 – Standard Classification of Acoustical Ceiling Products
- H. Ceilings and Interior Systems Contractors Association (CISCA) - Acoustical Ceilings Use and Practice
- I. UL - Fire Resistance Directory and Building Material Directory
- J. Florida Building Code (FBC)

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Product data for each type of product specified.
 - 2. Samples for verification purposes of each type of exposed finish required, prepared on samples of size indicated below and of same thickness and material indicated for final unit of Work. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected.
 - a. 6" square samples of each acoustical panel type, pattern, and color
 - b. Set of 12" long samples of exposed suspension system members, including moldings, for each color and system type required.

1.4 QUALITY ASSURANCE

- A. Fire Performance Characteristics:
 - 1. Surface Burning Characteristics: As follows, tested per ASTM E84 and complying with ASTM E1264 for Class A products.
 - a. Flame Spread Index: 25 or less.
 - b. Smoke Developed Index: 50 or less.
 - 2. Tested by UL or another nationally recognized testing laboratory.
 - 3. All ceiling panels must be appropriately marked with Class A designation.
- B. Single Source Responsibility for Ceiling Units: Obtain each type of acoustical ceiling unit from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- C. Single Source Responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical ceiling units and suspension system components to Project site in original, unopened packages.
 - 1. Store in a clean dry fully enclosed space and protect against damage from moisture, direct sunlight, surface contamination, and other causes.

The School District of Palm Beach County

Project Name

SDPBC Project No.

1.6 PROJECT CONDITIONS

- A. Install interior acoustical ceilings only when space is enclosed and weatherproof, wet work in space is complete and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity are at values near those for final occupancy.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below matching installed products, packaged with protective covering for storage, and are identified with labels describing contents.
 - 1. Acoustical Ceiling Units: Full size units equal to 2% of amount installed.
 - 2. Suspension System Components: Furnish the lesser of 1 full carton or a quantity of each exposed component equal to 2% of amount installed.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Mineral Base Panels are typical unless noted on Reflected Ceiling Plans.
 - 2. Tiles may be 24" x 24" or 24" x 48" non-directional, resistant to high humidity, and growth of mold/mildew, with Painted Finish (white) Perforated and Fissured Pattern, Class A finish.
 - a. General minimum NRC = 0.70 and CAC = 35
 - i) Armstrong World Industries "School Zone Fine Fissured"
 - ii) CertianTeed Ceilings (Subsidiary of Saint-Gobain) "Fine Fissured High NRC"
 - iii) USG "Radar" Climaplus High CAC/High NRC
 - b. Kitchen
 - i) USG "Climaplus Clean Room"
 - ii) Armstrong World Industries, "Clean Room VL" or "Fine Fissured Ceramaguard"
 - iii) CertianTeed Ceilings "Fine Fissured" with PlasticGard.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following, and the grid system shall be compatible with the tiles to provide resistant to high humidity and growth of mold/mildew:
 - 1. Non-Fire-Resistance Rated Double-Web Steel Suspension Systems:
 - a. Armstrong World Industries, Inc.
 - b. Chicago Metallic Corporation.
 - c. USG Interiors, Inc.
 - d. CertianTeed Ceilings
 - 2. Edge Moldings:
 - a. Armstrong World Industries, Inc.
 - b. Chicago Metallic Corporation.
 - c. Fry Reglet Corp.
 - d. USG Interiors, Inc.
 - e. CertianTeed Ceilings

2.2 ACOUSTICAL CEILING UNITS, GENERAL

- A. Standard for Acoustical Ceiling Units: Provide manufacturers' standard units of configuration indicated that comply with ASTM E 1264 classifications as designated by reference to types, patterns, acoustical ratings, and light reflectance, unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Use type E 400 (plenum mounting in which face of test specimen is 15-3/4" away from the test surface) per ASTM E795.
- B. Colors and Patterns: Provide products to match appearance characteristics indicated under each product type.

2.3 METAL SUSPENSION SYSTEMS, GENERAL

- A. Standard for Metal Suspension Systems: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C635/C635M requirements.
- B. Finishes and Colors: Provide manufacturer's standard factory applied finish for type of system indicated.
- C. Attachment Devices: Size for 5 times design load indicated in ASTM C635/C635M, Table 1, Direct Hung unless otherwise indicated.

- D. Wire Hangers, Braces, and Ties: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 - 1. Gage: Provide wire sized so that stress at 3 times hanger design load (ASTM C635/C635M, Table 1, Direct-Hung), will be less than yield stress of wire, but provide not less than 2.69 mm (0.106") diameter wire.
 - E. Edge Moldings and Trim:
 - 1. Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension system indicated.
 - 2. Provide column surround trim at round columns.
 - F. Retention Clips: Armstrong #414 or similar by other acoustical panel manufacturers.
- 2.4 NON-FIRE-RESISTANCE-RATED DIRECT-HUNG SUSPENSION SYSTEMS
- A. Wide-Face Capped Double-Web Steel Suspension System: Main and cross-runners roll-formed from pre-painted or electrolytic zinc-coated cold-rolled steel sheet, with pre-finished 15/16" wide metal caps on flanges; other characteristics as follows:
 - 1. Structural Classification: Intermediate Duty System
 - 2. End Condition of Cross-Runners: Override (stepped) or butt-edge type, as standard with manufacturer.
 - 3. Cap Material and Finish: Steel sheet painted white
- 2.5 MISCELLANEOUS MATERIALS
- A. Tile Adhesive as recommended by tile manufacturer, with UL label for Class 0-25 flame spread

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing ceiling system attaches or abuts, with Installer present, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system.
- B. Correct all unsatisfactory conditions before proceeding with work.

3.2 PREPARATION

- A. Furnish layouts for preset inserts, clips, and other ceiling anchors for installation specified in other sections.
 - 1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.
- B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling.
 - 1. Avoid use of less than half width units at borders, and comply with reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical ceiling systems to comply with installation standard referenced below, per manufacturer's instructions and CISCA "Ceiling Systems Handbook."
 - 1. Standard for Installation of Ceiling Suspension Systems: Comply with ASTM C636/C636M.
- B. Install edge moldings of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical units.
- C. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members.
 - 1. Scribe and cut panels to fit accurately at borders and at penetrations.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members.
- B. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage.
- C. Remove and replace work that cannot be successfully cleaned.

END OF SECTION