# SECTION 09 51 00
# ACOUSTICAL CEILINGS

## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

A. Furnish and install suspended acoustical tile ceiling including suspension system and associated edge moldings.

1. Provide edge moldings to fit penetrations exactly, including circular penetrations.
2. Furnish and install joint sealant at ceiling edge angles where abutting walls.

### 1.2 RELATED SECTIONS

A. Section 07 92 00 - JOINT SEALANTS: Sealant at gaps between new acoustical ceiling edge angles and all irregular walls.

B. Section 09 29 00 - GYPSUM BOARD: Suspended drywall construction ceilings and soffits.

C. Division 23 - FIRE SUPPRESSION: Sprinkler heads in ceiling system.

D. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Air diffusion devices in ceiling.

E. Division 26 - ELECTRICAL:

1. Fire alarm and smoke detection equipment mounted in ceiling system.
2. Light fixtures and independent hangers for suspended fixtures.

### 1.3 REFERENCES

A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES.

1. ASTM A 641 - Zinc- Coated (Galvanized) Carbon Steel Wire.
2. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method "UL Classified".
3. ASTM C 523 - Light reflectance of Acoustical Material by the Integrating Sphere Reflectometer.
4. ASTM C 635 - Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
5. ASTM C 636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
6. ASTM E 84 - Surface Burning Characteristics of Building Material "UL Classified".
7. ASTM E 119 - Fire Tests of Building Construction and Materials "UL Classified".
8. ASTM E 413 - Classification for Rating Sound Insulation.
9. ASTM E 580 - Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.
10. ASTM E 1264 - Classification of Acoustical Ceiling Products.
11. ASTM E 1414 - Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum. "UL Classified".
12. UL Fire Resistance Directory and Building Material Directory.
13. All applicable federal, state and municipal codes, laws and regulations

regarding flammability and smoke generation of interior finishes.

B. The following reference materials are hereby made a part of this Section by reference thereto:

1. CISCA (Ceilings and Interior Systems Contractors Association) - Acoustical Ceilings: Use and Practice.

## 1.4 SUBMITTALS

A. Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.
2. Shop drawings:
   a. 1/4 inch scale plans of each room or space; indicate grid layout and related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to the system.
   b. Large scale installation details of special conditions.
   c. All drawings bearing dimensions of actual measurements taken at the project.
3. Verification samples:
   a. 12 by 12 inch samples of acoustical units, illustrating material and finish.
   b. 12 inch long samples of suspension system components including main runners, cross runner and edge trim.

## 1.5 QUALITY ASSURANCE

A. Light Fixture Loading: Acoustical tile ceiling grid shall be designed and installed to support loading of all light fixtures installed into, and surface mounted from, ceiling grid.

## 1.6 QUALIFICATIONS

A. Applicator specializing in applying the work of this Section with a minimum of 3 years' experience.

## 1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver acoustical ceiling panel in original, unopened packages and store protected in a fully enclosed space.

## 1.8 PROJECT CONDITIONS

A. Maintain uniform temperature of minimum of 60 degrees Fahrenheit and humidity of 20 to 40 percent prior to, during, and after installation.

## 1.9 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, to allow work which will be concealed by the ceilings to be completed prior to commencing installing the ceilings in such locations.

B. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated and overhead work is completed, tested and approved.

C. Install acoustical units after interior wet work is dry.

## 1.10 WARRANTY

A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacture's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data.

B. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

### 1.11 EXTRA MATERIALS

A. Provide to the Owner, extra ceiling panel and suspension components, 3 percent of each type installed.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering similar products include the following:

1. Armstrong World Industries, Inc., Lancaster, PA.
2. USG Interiors Inc., Chicago, IL.

### 2.2 ACOUSTICAL CEILING PANELS

A. Type ACT-2 Ceiling panel:

1. Panel size: 24 by 48 inch by 1/2 inch thick.
2. Panel edge: Square lay-in edge.
3. Description: ASTM E-1264 Type III, Form 2, Pattern CE, wet formed mineral fiber, non-directional fissured, medium textured panel, non-combustible, vinyl latex paint finish.
4. Color: White.
5. Minimum light reflectance range: LR 0.77.
6. Acoustical characteristics:
   a. NRC range: N/A.
   b. CAC range: 40.
7. Acceptable products:
   a. USG product "Climaplus Vinyl", product number 3270.

### 2.3 CEILING GRIDS

A. Type ACT-2 ceiling grid: 15/16 inch exposed tee grid in white color matching ceiling panel; acceptable products are:

1. Armstrong: 15/16" Prelude Exposed Tee System.

### 2.4 ACCESSORIES

A. Edge moldings: Standard edge trim: Grid system manufacturer's standard L-shape edge trim compatible with exposed grid system and color matched.

B. Hanger attachments: Of the most appropriate types for the specific receiving surfaces.

C. Hangers: ASTM A641 Soft temper, pre-stretched galvanized carbon steel wire, with a yield stress of at least 3 times design load, but not less than 12 gage.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.

B. Beginning of installation means acceptance of site conditions.

### 3.2 PREPARATION

A. Carefully examine all receiving surfaces, to which attachments will be made hereunder, and determine the most practical way of making such attachments. Request Architect's approval of any attachment method which differs from that indicated on the approved shop drawings before proceeding with installation.

B. Permit acoustical ceiling tile to reach room temperature and a stabilized moisture content prior to installation.

### 3.3 INSTALLATION

A. Locate system on room axis, leaving equal sized border units of not less than one-half tile width.

B. Install all components of the suspended grid systems in accordance with the manufacturer's instructions, the approved shop drawings, conforming to ASTM C-636 requirements. Ensure a deflection not to exceed 1/360 span of 48-inch simple span.

C. Install specified edge moldings wherever ceilings intersect a wall or partition surface, and around all items having any dimension of 4 inches or more which penetrate the ceilings, including circular penetrations. Set moldings absolutely level, using as long lengths as practicable, and secure with fasteners recommended by manufacturer for the type of substrate.

1. Sealant Bed: Apply continuous ribbon of acoustical sealant (type AA specified under Section 07 92 00), concealed on back of vertical leg before installing moldings.
2. Screw-attach moldings to substrate at intervals not over 16 inches on center. and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12'-0". Miter corners accurately and connect securely.

D. Install hanger attachments to overhead construction in accordance with the approved shop drawings, spacing the attachments not more than 48 inches on centers over location of each main tee member.

1. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers to span the extra distance.
2. Install hanger wire to attachments with triple twists.

E. Install main tees parallel to the long dimension of each area, spacing the tees 48 inches on centers. Secure the bottom of hanger wires through slots in the main tee members and tie with triple twists. Level the main tees as the work progresses.

F. Uniformly space the cross tees at 24 inches on centers, and secure the cross tees into the main tees as recommended by the system manufacturer.

G. Fit acoustical ceiling tile units in place, free from damaged edges or other defects detrimental to appearance and function. Install acoustical ceiling tile level, in uniform plane, and free from twist, warp or dents.

1. Field cut tegular type tile with a tegular reveal at all edge conditions.
2. Where required by governmental agencies having jurisdiction, install retention clips, provide two clips per ceiling panel installed on opposite sides of panel.

H. Manually connect tees where necessary to coordinate with light fixture sizes. Coordinate main grid framing with light fixture sizes.

I. Where field cutting of tegular tiles is necessary field paint exposed edges in compatible color to match tile.

## 3.4 TOLERANCES

A. Maximum variation from flat and level surface: 1/8 inch in 10 feet.

B. Maximum variation from plumb of grid members caused by eccentric loads: 2 degrees.

## 3.5 CLEANING

A. Properly clean surfaces of panels and open grids free from dirt and handling marks. Wherever surfaces cannot be cleaned by normal methods or have defects, remove and replace with new components.

**END OF SECTION**