SECTION 09 51 00
ACOUSTICAL CEILINGS

SPEC WRITER NOTES:
1. Use this section only for NCA projects.
2. Delete between //_____// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.
2. Coordinate with Section 09 06 00, SCHEDULE FOR FINISHES, to define texture, patterns, and colors other than white with locations in the room finish schedule and reflective ceiling plans.
3. Section does not include acoustical plaster, spray or trowel applications.
4. Do not use glass fiber units for lay-in ceiling applications.
5. Insure the reflective ceiling plans show panel sizes and layouts with unusual conditions.

PART 1- GENERAL

1.1 DESCRIPTION
A. Metal ceiling suspension system for acoustical ceilings.
B. Acoustical units.

1.2 RELATED WORK
A. Color, pattern, and location of each type of acoustical unit:
   Section 09 06 00, SCHEDULE FOR FINISHES.
//B. Access doors in adhesive applied tile: Section 08 31 13, ACCESS DOORS AND FRAMES.//

1.3 SUBMITTAL
A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
B. Samples:
   1. Acoustical units, each type, with label indicating conformance to specification requirements, // including units specified to match existing. //
   2. Colored markers for units providing access.
C. Manufacturer's Literature and Data:
   1. Ceiling suspension system, each type, showing complete details of installation //, including suspension system specified to match existing and upward access system details for concealed grid systems.//
   2. Acoustical units, each type
   //3. Runners designed for snap-in attachment of metal pans.//
D. Manufacturer's Certificates: Acoustical units, each type, in accordance with specification requirements.

1.4 DEFINITIONS
A. Standard definitions as defined in ASTM C634.
B. Terminology as defined in ASTM E1264.

SPEC WRITER NOTES: Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Update and specify only that which applies to the project.

1.5 APPLICABLE PUBLICATIONS
A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.
B. American Society for Testing and Materials (ASTM):
   A641/A641M-09 ............ Zinc-coated (Galvanized) Carbon Steel Wire
   A653/A653M-08 ............ Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip Process
   C423-08 ................. Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
   C634-09 (E2007) ........ Standard Terminology Relating to Environmental Acoustics
   C635-07 ............... Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
   C636-08 ............... Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
   E84-09 ............... Surface Burning Characteristics of Building Materials
   E119-08 ............... Fire Tests of Building Construction and Materials
   E413-04 ............... Classification for Rating Sound Insulation.
   E580-08 ............... Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint
   E1264-08 ............. Classification for Acoustical Ceiling Products

PART 2- PRODUCTS

SPEC WRITER NOTES:
1. Make material requirements agree with applicable requirements specified in the referenced Applicable Publications.
2. Exposed grid for 600 mm X 1200 mm (2 by 4 feet) lay-in panels is preferred system for economy.
3. Do not use narrow exposed grid face suspension system for lay-in mineral base acoustical units. Minimum width is 22 mm (7/8) inch with 8 mm (5/16 inch) minimum bearing area for panel edge. No exceptions.

2.1 METAL SUSPENSION SYSTEM
   A. ASTM C635, heavy-duty system, except as otherwise specified.
   B. Exposed grid suspension system and wall molding:
      1. Exposed grid width not less than 22 mm (7/8 inch) with not less than 8 mm (5/16 inch) panel bearing surface.

2.2 WIRE
   A. ASTM A641.
   B. For wire hangers: Minimum diameter 2.68 mm (0.1055 inch).
   C. For bracing wires: Minimum diameter 3.43 mm (0.1350 inch).

2.3 ACOUSTICAL UNITS
   A. General:
      1. Provide panels complying with ASTM E12642. Class A Flame Spread: ASTM 84
      4. Minimum CAC (Ceiling Attenuation Class): 40-44 range unless specified otherwise: ASTM E413.
      5. Manufacturers standard finish, minimum Light Reflectance (LR) coefficient of 0.75 on the exposed surfaces, except as specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES. // Colored units integrally colored throughout.//

   SPEC WRITER NOTES:
   1. Acoustical tile or panel layouts and sizes on reflective ceiling plans are required with penetrations shown.
   2. In a small project without sufficient penetrations to require a reflective ceiling plan specify tile size for lay-in panels.
   6. Lay-in panels: Sizes as shown, with // square edges // reveal edges //.

2.4 ACCESS IDENTIFICATION
   A. Markers:
      1. Use colored markers with pressure sensitive adhesive on one side.
      2. Make colored markers of paper or plastic, 6 to 9 mm (1/4 to 3/8 inch) in diameter.
   B. Use markers of the same diameter throughout building.

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C. Color Code: Use following color markers for service identification:

<table>
<thead>
<tr>
<th>Color</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Sprinkler System: Valves and Controls</td>
</tr>
<tr>
<td>Green</td>
<td>Domestic Water: Valves and Controls</td>
</tr>
<tr>
<td>Yellow</td>
<td>Chilled Water and Heating Water</td>
</tr>
<tr>
<td>Orange</td>
<td>Ductwork: Fire Dampers</td>
</tr>
<tr>
<td>Blue</td>
<td>Ductwork: Dampers and Controls</td>
</tr>
<tr>
<td>Black</td>
<td>Gas: Laboratory, Medical, Air and Vacuum</td>
</tr>
</tbody>
</table>

PART 3 EXECUTION

3.1 CEILING TREATMENT

A. Lay out acoustical units symmetrically about center lines of each room or space unless shown otherwise on reflected ceiling plan.

B. Moldings:
1. Install metal wall molding at perimeter of room, column, or edge at vertical surfaces.
2. Install special shaped molding at changes in ceiling heights and at other breaks in ceiling construction to support acoustical units and to conceal their edges.

3.2 CEILING SUSPENSION SYSTEM INSTALLATION

A. General:
1. Comply with ASTM C635 and C636
2. Install metal suspension system for acoustical tile and lay-in panels in accordance with ASTM C636, except as specified otherwise.
3. Use direct or indirect hung suspension system or combination thereof as defined in ASTM C635.
4. Support a maximum area of 1.48 m² (16 sf) of ceiling per hanger.
5. Prevent deflection in excess of 1/360 of span of cross runner and main runner.
6. Provide extra hangers, minimum of one hanger at each corner of each item of mechanical, electrical and miscellaneous equipment supported by ceiling suspension system not having separate support or hangers.
7. Provide not less than 100 mm (4 inch) clearance from the exposed face of the acoustical units to the underside of ducts, pipe, conduit, secondary suspension channels, concrete beams or joists; and steel beam or bar joist unless furred system is shown.
8. Use main runners not less than 1200 mm (48 inches) in length.
9. Install hanger wires vertically. Angled wires are not acceptable except for seismic restraint bracing wires.

3.3 ACOUSTICAL UNIT INSTALLATION

A. Comply with ASTM C636

B. Markers:
1. Install markers of color code specified to identify the various concealed piping, mechanical, and plumbing systems.
2. Attach colored markers to exposed grid on opposite sides of the units providing access.
3. Attach marker on exposed ceiling surface of upward access acoustical unit.

3.4 CLEAN-UP AND COMPLETION
   A. Replace damaged, discolored, dirty, cracked and broken acoustical units.
   B. Leave finished work free from defects.

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