SECTION 09510

ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for the materials and installation of acoustical suspension system and lay-in acoustical ceiling panels (ACT-1, ACT-2, ACT-3) and concealed spline acoustical ceiling panels (ACT-5).

1. Work under this Section includes furnishing and installing safety hanger wires for mechanical and electrical equipment to extent specified. Connecting safety wires to such equipment is not included.

B. Related Sections:

1. Suspended ceiling grid without ceiling panels (OGC) is specified in Section 09130.

2. Adhesive-applied acoustical ceiling tile (ACT-4) is specified in Section 09512.

1.02 SUBMITTALS

A. Shop Drawings:

1. Indicate ceiling-system layouts and general and atypical conditions and details.

2. Include details of bracing, special features and joints, perimeters, relationship to adjacent construction, and anchorage and connections to structures.

B. Product Data: Manufacturer's descriptive and technical data and illustrations, marked to identify product materials, types, and variations.

1. Recycled Content: Furnish product data on post-consumer recycled content and post-industrial recycled content as a percentage of the full product composite.

2. Regional Materials: Furnish product data or letter stating the location (closest city, state) where product was manufactured (final processing or assembly) and, if available, the location where raw materials were harvested, extracted or recovered (mine, quarry, plantation, forest, recycling recovery center, etc.).

C. Material Samples:

1. Duplicate sets of 10-inch-long pieces of grid system and perimeter trim members with one end as factory fabricated, and connection and fastening accessories and devices.

2. Duplicate sets of 6-inch square panels for each type and size of acoustical unit required.

1.03 QUALITY ASSURANCE

A. Installer's Qualifications: Regularly providing installation of assemblies of the types required for not less than 5-years prior to work under this Contract.

B. Suspension systems shall be designed, fabricated, and installed to meet requirements of ASTM C635 and ASTM C636.

1.04 ENVIRONMENTAL QUALITY ASSURANCE

A. Environmental Requirements: Acoustical suspension systems shall have a minimum 25-percent recycled content.

B. Acoustical ceiling panels shall have a minimum recycled content of 79-percent post-consumer recycled slag, cellulose fiber, starch, perlite, and clay.

1.05 EXTRA MATERIALS

A. In addition to acoustical panels for completing installations required, furnish additional units, in typical field sizes, for each type of unit used in the work.

B. Furnish quantities equal to not less than 3-percent of total installed area of each type of unit or greater to result in full carton lots for each type, except not less than one full carton for any one type of unit.

C. Supply extra units from production lots or color runs the same as for units used in the work, and supply in cartons as factory packaged and labeled. Also identify cartons with Project name and type of ceiling panel.

D. Deliver materials to project premises just prior to substantial completion, and store at location as directed.

1.06 WARRANTY

A. Warrant acoustical ceiling panels to be free from visible sag and against mold, mildew and bacteria for a period of 30-years from Date of Substantial Completion. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.

PART 2 - PRODUCTS

2.01 EXPOSED GRID SYSTEM FOR ACOUSTICAL PANEL TYPE ACT-1

A. Approved Manufacturers: USG Interiors, Inc. "Donn Fineline DXF/DXLF" or approved equal.

B. Main Runners: 9/16-inch flange with ¼-inch wide reveal, 1-1/2-inch high web.

C. Cross Runners: 9/16-inch flange with ¼-inch wide reveal, 1-25/32-inch high web.

D. Wall Angle, Reveals, and Miscellaneous Trim: Roll-formed from electrogalvanized steel strip to profiles indicated.

E. Finish: Factory-applied white low gloss enamel.

F. Structural Classification: Heavy duty meeting the requirements of ASTM C635.

2.02 EXPOSED GRID SYSTEM FOR ACOUSTICAL PANEL TYPE ACT-2 AND ACT-3

A. Approved Manufacturers: USG Interiors, Inc. "Donn DX System" or approved equal.

B. Main Runners: 15/16-inch flange, 1-1/2-inch high web.

C. Cross Runners: 15/16-inch flange, 1-inch high web.

D. Wall Angle, Reveals, and Miscellaneous Trim: Roll-formed from electrogalvanized steel strip to profiles indicated.

E. Finish: Factory-applied white low gloss enamel.

F. Structural Classification: Heavy duty meeting the requirements of ASTM C635.

2.03 CONCEALED GRID SYSTEM FOR ACOUSTICAL PANEL TYPE ACT-5

A. Approved Manufacturers: Armstrong "Prelude", Chicago Metallic, USG Interiors "Donn DX Concealed" or approved equal.

B. Provide access hooks, access clips and other accessories required for accessible sections.

C. Wall Angle, Reveals, and Miscellaneous Trim: Roll-formed from electrogalvanized steel strip to profiles indicated.

D. Finish: Factory-applied white low gloss enamel. Inside of reveal shall be finished with factory-applied black low gloss enamel.

E. Structural Classification: Heavy duty meeting the requirements of ASTM C635.

2.04 ACOUSTICAL PANEL TYPE ACT-1

A. Approved Manufacturers: Armstrong "Cirrus" Item No. 589 / S299 or approved equal.

1. Where indicated on the Drawings, provide Armstrong "Cirrus Themes" S550 Critter Series or approved equal. See drawings for quantity in each room.

B. Material: Mineral fiber, wet-formed.

C. Typical Field Size: Nominal 24- x 24-inches, ¾-inch thick.

D. Edges: Beveled Tegular.

E. NRC: .70 / .65.

F. CAC: 35.

G. Flame Spread Classification: Class A.

H. Light-Reflectance: 0.86.

I. Finish and Color: Factory-applied, washable, vinyl-latex paint in manufacturer's standard off-white color.

J. Acoustical panels shall have antimicrobial treatment on front face.

K. Recycled Content:

1. Post-consumer Recycled Content: 4-percent.

2. Pre-consumer Recycled Content: 35-percent.

L. VOC Formaldehyde: No added.

2.05 ACOUSTICAL PANEL TYPE ACT-2

A. Approved Manufacturers: Armstrong "Fine Fissured Ceramaguard" Item No. 608.

B. Material: Mineral fiber, wet-formed.

C. Typical Field Size: 24-inches x 48-inches x 5/8-inch thick.

D. Edges: Square.

E. NRC: 0.55.

F. CAC: 40.

G. Flame Spread Classification, ASTM E84: 0-25.

H. Light-Reflectance: 0.82.

I. Finish and Color: Factory-applied, scrubbable vinyl plastic coating in manufacturer's standard off-white color.

J. Recycled Content:

1. Post-consumer Recycled Content: 0-percent.

2. Pre-consumer Recycled Content: 38-percent.

K. VOC Formaldehyde: No added.

2.06 ACOUSTICAL PANEL TYPE ACT-3

A. Approved Manufacturers: Armstrong "Cortega" Item No. 703 or approved equal.

B. Material: Mineral fiber, wet-formed.

C. Typical Field Size: Nominal 24- x 48-inches, 5/8-inch thick.

D. Edges: Angled Tegular.

E. NRC: .55.

F. CAC: 35.

G. Flame Spread Classification: Class A.

H. Light-Reflectance: 0.82.

I. Finish and Color: Factory-applied, washable, vinyl-latex paint in manufacturer's standard off-white color.

J. Acoustical panels shall have antimicrobial treatment on front face.

K. Recycled Content:

1. Post-consumer Recycled Content: 1- to 5-percent.

2. Pre-consumer Recycled Content: 24- to 27-percent.

L. VOC Formaldehyde: Low.

2.07 ACOUSTICAL PANEL TYPE ACT-4

A. As specified in Section 09512.

2.08 ACOUSTICAL PANEL TYPE ACT-5

A. Approved Manufacturers: Armstrong World Industries, Inc. "Cirrus" Item No. 580 or approved equal.

B. Material: Mineral fiber, wet-formed.

C. Typical Field Size: 12-inches x 12-inches x ¾-inch thick.

D. Edges: Beveled K4C4 for installation in concealed spline grid system.

E. NRC: 0.65.

F. CAC: 40.

G. Flame Spread Classification, ASTM E84: 0-25.

H. Light-Reflectance: 0.86.

I. Finish and Color: Factory-applied, washable, vinyl-latex paint in manufacturer's standard off-white color.

J. Acoustical panels shall have antimicrobial treatment on front.

K. Recycled Content:

1. Post-consumer Recycled Content: 2-percent.

2. Pre-consumer Recycled Content: 69-percent.

L. VOC Formaldehyde: No added.

2.09 SUSPENSION MATERIALS AND FASTENINGS

A. Wire:

1. General: ASTM A641, galvanized steel, regular coating, soft temper; factory pre-straightened units.

2. Hanger and Safety Wires: 12-gauge.

B. Wire Connections to Overhead Structures:

1. Hanger Wires: Connection device capable of carrying not less than 100-pounds.

2. Bracing Wires: Connection device capable of carrying not less than 200-pounds or the actual design load, whichever is greater, with a safety factor of 2 without yielding.

C. Fastenings for Accessories:

1. Bolts or screws of adequate size, in types appropriate for conditions and materials involved, made of corrosion-resistant materials or coated as approved.

2. Concealed only, unless otherwise indicated or approved.

D. Compression Struts: 1-1/4-inch EMT conduit or as indicated.

PART 3 - EXECUTION

3.01 AMBIENT CONDITIONS

A. Building shall have been entirely enclosed and heated not less than 10-days before start of suspended-ceiling work.

B. Before installation, acoustical units shall have been stored within the spaces where they are to be used for not less than 3-days, and with cartons opened and stripped sufficiently to permit units to stabilize to ambient conditions.

3.02 SUSPENSION SYSTEM INSTALLATION

A. Installations shall be in accordance with manufacturers' instructions and reviewed shop drawings.

B. Anchor hanger and bracing wire anchors so that the direction of the wire aligns as closely as possible with the direction of the forces acting on the wire. Provide noise isolation hangers installed in accordance with manufacturer's instructions at ceiling hanger wires where indicated.

C. Provide 12-gauge hanger wires at the ends of all main and cross runners within 8-inches from the support or within 1/4 of the length of the end tee, whichever is least, for the perimeter of the ceiling area.

D. Provide trapeze or other supplementary support members at obstructions to main hanger spacing. Provide additional hangers, struts or braces as required at all ceiling breaks, soffits or discontinuous areas. Hanger wires more than 1 in 6 out of plumb shall have counter-sloping wires.

E. Ceiling grid members shall be attached to not more than 2 adjacent walls. Ceiling grid members shall be at least 1/2-inch free of other walls.

F. At the perimeter of the ceiling area where main or cross runners are not connected to the adjacent wall, provide interconnection between the runners at the free end to prevent lateral spreading.

G. Provide sets of four 12-gauge splayed bracing wires oriented 90-degrees from each other at the following spaces:

1. Place sets of bracing wires spaced not more than 12-feet by 12-feet on center.

2. Provide bracing wires at locations not more than 1/2 the specified spacing from each perimeter wall and at the edge of vertical ceiling offsets.

3. The slope of these wires shall not exceed 45-degrees from the plane of the ceiling and shall be taut without causing the ceiling to lift. Splices in bracing wires are not permitted.

H. Fasten hanger wires with not less than 3 tight turns; fasten bracing wires with 4 tight turns. Make tight turns within a distance of 1-1/2-inches.

I. Support of Light Fixtures and Air Terminals:

1. Ceiling suspension systems that support light fixtures, air-ventilation grilles or partitions shall have a classification of heavy-duty.

2. Recessed or drop-in light fixtures and grilles shall be supported directly from the fixture housing to the structure above with a minimum of two 12-gauge wires located at diagonally opposite corners. Fixture support wires may be slightly loose to allow the fixture to seat in the grid system.

3. Fixture shall not be supported from main runners or cross runners if the weight of the fixtures causes the total dead load to exceed the deflection capability of the ceiling suspension system.

J. Installation Tolerances:

1. Bottom surface plane of each assembly shall be within plus or minus 1/8-inch of ceiling-height level required.

2. Bottom surface plane of each assembly shall be level and true to plane within 1/8-inch in 12-feet.

3.03 PERIMETER TRIM

A. Provide in longest lengths available and combinations of lengths to minimize number of joints required.

B. Do not use pieces shorter than 48-inches.

C. Miter joints at corners.

D. Install to neatly close with adjoining vertical surfaces.

3.04 ACOUSTICAL PANEL INSTALLATION

A. Install acoustical panels in suspended grid system in accordance with manufacturer's instructions.

3.05 COMPLETION

A. Adjust hangers as required. Addition of kinks or bends in hanger are not acceptable; take up in ties only.

B. When complete, grid members of each assembly shall be mutually parallel/square, accurately aligned, with joints neatly formed and closely fitted and aligned flush; each assembly shall be securely anchored and braced to structure to prevent movement.

C. Acoustical panels shall rest uniformly on their supporting members and shall be flat and free from twist and warp.

D. Exposed surfaces of acoustical units shall be clean and free from scratches, dents, tool marks, stains, discoloration, fingerprints, and other defects and damage.

3.06 WASTE MANAGEMENT

A. Separate and recycle waste materials to the maximum extent possible.

B. Separate waste and place in designated areas in the following categories for recycling:

1. ½ panels and larger, set aside for reuse by State, non-profit organizations such as Habitat for Humanity, etc.

2. Place scrap panels in designated areas for recycling or reuse.

3. Separate cardboard waste and place in designated areas for recycling.

END OF SECTION

SECTION 09512

ACOUSTICAL CEILING AND WALL TILE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for the materials and installation of the following:

1. Adhesively-applied 12-inch x 12-inch acoustical ceiling and wall tile (ACT-4) over gypsum board.

B. Related Sections:

1. Open grid suspension system is specified in Section 09132.
2. Gypsum board substrate is specified in Section 09250.
3. Acoustical ceilings (ACT-1, ACT-2, ACT-3, and ACT-5) are specified in Section 09510.

1.02 SUBMITTALS

A. Product Data: Manufacturer's descriptive and technical data and illustrations, marked to identify product materials, types, and variations; for both grid systems and acoustical materials.

1. Recycled Content: Furnish product data on post-consumer recycled content and post-industrial recycled content as a percentage of the full product composite.
2. Regional Materials: Furnish product data or letter stating the location (closest city, state) where product was manufactured (final processing or assembly) and, if available, the location where raw materials were harvested, extracted or recovered (mine, quarry, plantation, forest, recycling recovery center, etc.).

B. Material Samples: Duplicate sets of 6-inch square tiles.

1.03 QUALITY ASSURANCE

A. Installer's Qualifications: Regularly providing installation of assemblies of the types required for not less than 5-years prior to work under this Contract.

1.04 EXTRA MATERIALS

A. In addition to acoustical tile for completing installations required, furnish additional units, in typical field sizes, for each type of unit used in the work.

B. Furnish quantities equal to not less than 3-percent of total installed area of each type of unit or greater to result in full carton lots for each type, except not less than one full carton for any one type of unit.

C. Supply extra units from production lots or color runs the same as for units used in the work, and supply in cartons as factory packaged and labeled. Also identify cartons with Project name and type of ceiling tile.

D. Furnish written certification that extra materials supplied have been inspected and reconfirmed to be the same as used in the work.

E. Deliver materials to project premises just prior to Substantial Completion, and store at location as directed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Acoustical Tile (ACT-4):

1. Approved Manufacturer: Armstrong "Cirrus" Item No. 580.
2. Material: Mineral fiber, wet-formed.
3. Typical Field Size: 12-inches x 12-inches x 3/4-inch thick.
4. Edges: Beveled K4C4.
5. NRC: 0.65.
6. CAC: 40.
7. Flame-Spread Classification, ASTM E84: 0-25.
8. Light-Reflectance: 0.86.
9. Finish and Color: Factory-applied, washable vinyl paint in manufacturer's standard off-white color.
10. Acoustical tile shall have antimicrobial treatment on front face.
11. Recycled Content:
    a. Post-consumer Recycled Content: 2-percent.
    b. Pre-consumer Recycled Content: 69-percent.
12. VOC Formaldehyde: No added.

B. Tile Adhesive: W.W. Henry No. 237. Tile adhesive shall have a flame spread of 25 or less and smoke development rating of 450 or less when tested in accordance with ASTM E84.

C. Leveling Splines for Adhesively Applied Tiles: Tile manufacturer's standard flat splines.

PART 3 - EXECUTION

3.01 AMBIENT CONDITIONS

A. Before installation, acoustical units shall have been stored within the spaces where they are to be used for not less than 3-days, and with cartons opened and stripped sufficiently to permit units to stabilize to ambient conditions.

3.02 INSTALLATION

A. Install adhesively applied tile in accordance with manufacturer's instructions. Provide leveling splines for each tile. Secure each tile using not less than 5 dabs of adhesive for field units and 4 dabs of adhesive for cut units, each dab covering not less than 4-square inches of contact area.

B. Neatly scribe border units to fit with adjoining vertical surfaces.

C. When complete, each tile shall be level, accurately aligned and securely adhered in place.

D. Tile joints shall be straight with cross joints mutually square and free from stagger, gaps, and offset across adjoining tile surfaces.

E. Exposed surfaces of acoustical units shall be clean and free from scratches, gouges, dents, stains, discoloration, fingerprints, and other defects and damage.

END OF SECTION