

**SECTION 09 5423
LINEAR METAL CEILINGS - USG**

<<<< UPDATE NOTES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Linear metal <<ceilings; and soffits>>.
- B. Suspended metal support system and perimeter trim.
- C. Supplementary <<acoustical; and thermal>> insulation over system units.

1.02 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 1000 - Concrete Forms and Accessories: Execution requirements for placement of <<attachment anchors; hanger clips; or _____>> to <<structure above; ceiling system; or _____>>.
- C. Section 03 3000 - Cast-in-Place Concrete: Execution requirements for placement of <<attachment anchors; hanger clips; or _____>> to <<structure above; ceiling system; or _____>>.
- D. Section 05 3100 - Steel Decking: Execution requirements for placement of <<attachment anchors; hanger clips; or _____>> to <<structure above; ceiling system; or _____>>.
- E. Section 07 2100 - Thermal Insulation.
- F. Section 08 3100 - Access Doors and Panels: Access panels.
- G. Section 09 2116 - Gypsum Board Assemblies - USG: Gypsum board and metal framing products
- H. Section 09 5100 - Acoustical Ceilings - USG: Metal suspension system.
- I. Section 21 1300 - Fire-Suppression Sprinkler Systems: Sprinkler heads.
- J. Section 23 3700 - Air Outlets and Inlets: Air <<diffusers; grilles; and _____>>.
- K. Section 26 5100 - Interior Lighting: Luminaires.
- L. Section 26 5600 - Exterior Lighting: Luminaires.
- M. Section 27 5116 - Public Address Systems: Audio speakers.
- N. Section 28 4600 - Fire Detection and Alarm: Fire detection and alarm components in ceiling.

1.03 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM A492 - Standard Specification for Stainless Steel Rope Wire; 1995 (Reapproved 2013).
- C. ASTM A580/A580M - Standard Specification for Stainless Steel Wire; 2018.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.
- G. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2017.
- H. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2017.

- I. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- J. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- L. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- M. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- N. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2020.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate work of this section with installation of mechanical and electrical components and with other construction activities affected by work of this section.
- B. Preinstallation Meeting: Convene **<<one; or _____>>** week before starting work of this section.
- C. Sequencing: Supply hanger clips during steel deck erection. Supply additional hangers and inserts as required.

1.05 SUBMITTALS

- A. See Section **01 3000 - Administrative Requirements** for submittal procedures.
- B. Product Data: Furnish for **<<component profiles; materials; perimeter and integral trim; space closures; and _____>>**.
- C. Shop Drawings: Indicate **<<reflected ceiling plan; location of mechanical and electrical components; details of junction with dissimilar materials; points of suspension; and _____>>**.
 - 1. Seismic Design: Include seal and signature of design professional on each drawing.
- D. Samples: Submit **<<two; or _____>>** samples **_____ by _____ inch (_____ by _____ mm)** in size illustrating color and finish of exposed to view components.
- E. Designer's qualification statement.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.
- H. Maintenance Materials: Furnish the following for **Owner's** use in maintenance of project.
 - 1. See Section **01 6000 - Product Requirements**, for additional provisions.
 - 2. Extra Linear Panels: **<<One; Ten; or _____>>**, standard length.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications for Seismic Design: Perform under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at **the State in which the Project is located**.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum **<<three; or _____>>** years **<<documented; or None - N/A>>** experience.
- C. Installer Qualifications: Company specializing in performing the work of this section.
 - 1. Minimum _____ years **<<documented; or None - N/A>>** experience.
 - 2. Approved by metal ceiling manufacturer.
- D. Products Requiring Electrical Connection: Listed and classified by **<<Underwriters Laboratories Inc; testing firm acceptable to the authority having jurisdiction; and _____>>**.

1.07 MOCK-UP

- A. Construct _____ mock-up, _____ feet (_____ m) long by _____ feet (_____ m) wide; include suspension system, panels, << **closures; light fixtures; integral mechanical and electrical components; and** _____ >> in mock-up.
- B. See Section **01 4000 - Quality Requirements** for additional requirements.
- C. Locate mock-up << **where directed; or** _____ >>.
- D. Mock-up << **may; or may not**>> remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Accept factory-finished products on site in manufacturer's unopened factory packaging only; reject opened packages.
- B. Protect factory-finished products from damage to appearance by storing products in manufacturer's unopened factory packaging in dry storage area.

1.09 WARRANTY

- A. See Section **01 7800 - Closeout Submittals** for additional warranty requirements.
- B. Provide << **five; or** _____ >> year manufacturer warranty; include coverage for corrosion resistance and discoloration of surface finish.

PART 2 PRODUCTS

2.01 LINEAR METAL CEILING ASSEMBLIES

- A. Linear Metal << **Ceiling; Soffit; and** _____ >> Systems: Include << **linear pans; baffles; baffle assemblies; and** _____ >>; suspension members, trim, and accessories as required to provide a complete installation.
- B. Linear Metal Ceiling Assembly Type << **LMC-1; or** _____ >><< **Item No. _____; or None - N/A**>>:
 1. Pans: << **Paraline I Linear Metal Pans; Paraline II Linear Metal Pans; Paraline III Linear Metal Pans; Paraline Plus Linear Metal Pans; Planx Linear Metal Pans; or** _____ >>.
 2. Layout: As indicated on drawings.
 3. Finish Type:
 - a. Saranté Colors: << **As indicated on drawings; To be selected from manufacturer's standards; S11 Creme Ovang; S21 Blond Teak; S31 Golden Oak; S12N Valley Maple; S32 CP Maple; S33N2 Honey Anigre; S23N Golden Birch; S13 Red Birch; S25 Natural Ovang; S34 Cherry Anigre; S14N Cinnamon Cherry; S22 Oak Line; S24N Grey Cedar; S25 Cherry Birch; S15 Blond Pear; S37 Dark Jatoba; S36N European Cherry; S16N Tan Sawn Oak; S17 Dark Oak; S27 Forest Walnut; S26 Earth Rosewood; S18 Sable Walnut; S38 Natural Walnut; or** _____ >>.
 - b. Wood Tones Colors: << **As indicated on drawings; To be selected from manufacturer's standards; 3467 Beech; 3465 Dark Bamboo; 3466 Light Bamboo; 3468 Dark Cherry; 3469 Light Cherry; 3470 Maple; 3471 Red Oak; 3472 Walnut; or** _____ >>.
 - c. Anodized - On Metal Colors: << **As indicated on drawings; To be selected from manufacturer's standards; 058 Brushed Aluminum; 086 Polished Aluminum; Kryolite; Grau; Sateen; or** _____ >>.
 - d. Painted - On Metal Colors: << **As indicated on drawings; To be selected from manufacturer's standards; Standard Silver; 050 Flat White; 002 Silver Satin; 1690 Metallic Copper; 1691 Metallic Gold; 1652 Metallic Oyster; or** _____ >>.
 4. Standard Perforations Pattern: << **CD12510; or** _____ >>.
 5. Parti Custom Multi-Panel Perforations: On portions of linear metal ceilings indicated on drawings.
 6. Interior Suspension Grid: << **Paralock Tees; Paralock Plus Tees; Planx Tees; Curvatura Tees; DWSS Tees; or** _____ >>.

- 7. Exterior Suspension Grid: <<***Paralock Plus Tees; Symmetrical Carriers; or _____***>>.
- C. Linear Metal Baffles Type <<***LMB-1; or _____***>><<***, Item No. _____; or None - N/A***>>:
 - 1. Baffles: <<***Paraline Baffles; or _____***>>.
 - 2. Layout: As indicated on drawings.
 - 3. Finish Type:
 - a. Anodized - On Metal Colors: <<***As indicated on drawings; To be selected from manufacturer's standards; 058 Brushed Aluminum; 086 Polished Aluminum; or _____***>>.
 - b. Painted - On Metal Colors: <<***As indicated on drawings; To be selected from manufacturer's standards; 050 Flat White; 002 Silver Satin; 3708 Matte White; or _____***>>.
 - 4. Standard Perforations Pattern: <<***SD-07; or _____***>>.
 - 5. Parti Custom Multi-Panel Perforations: On portions of linear metal ceilings indicated on drawings.
 - 6. Suspension Grid: Curvatura tees.
 - 7. Suspension Grid: DWSS planar tees for flat ceilings.
 - 8. Suspension Grid: DWSS vault and valley tees for curved ceilings.
 - 9. Suspension Grid: Exposed Donn DX.
 - 10. Suspension Grid: Gridware.
- D. Linear Metal Baffle Assembly Type <<***LMBA-1; or _____***>><<***, Item No. _____; or None - N/A***>>:
 - 1. Baffle Assemblies: <<***Barz Design Solutions; or _____***>>.
 - 2. Layout: As indicated on drawings.
 - 3. Finish Type:
 - a. Sarante Colors: <<***As indicated on drawings; To be selected from manufacturer's standards; S22 Oak Line; S36N European Cherry; S37 Dark Jatoba; or _____***>>.
 - b. Painted - On Metal Colors: <<***As indicated on drawings; To be selected from manufacturer's standards; Blanco Mat; or _____***>>.
 - 4. Standard Perforations Pattern: <<***SD-07; or _____***>>.
 - 5. Parti Custom Multi-Panel Perforations: On portions of linear metal ceilings indicated on drawings.
 - 6. Suspension Grid: Semi-concealed, with CP slotted main tees and DX cross tees.

2.02 DESIGN REQUIREMENTS

- A. Design components to ensure <<***light fixtures; installed accessories; and _____***>> will not induce eccentric loads. Where components may induce rotation of ceiling system components, provide stabilizing reinforcement.

2.03 PERFORMANCE REQUIREMENTS

- A. Design for maximum deflection of <<***1/360; or _____***>> of span.
- B. Design to support imposed loads of indicated elements without eccentric loading of supports. Where supported elements may induce rotation of ceiling system components, provide stabilizing reinforcement.
- C. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category <<***C; D, E, or F; or _____***>> and complying with the following:
 - 1. Local authorities having jurisdiction.
 - 2. ICC-ES Evaluation Report No. _____.
- D. Surface Burning Characteristics: Flame spread index of 25, smoke developed index of 50, when tested in accordance with ASTM E84.

Coordinate acoustic requirements with acoustical backer and other components specified below. Verify manufacturers' ability to meet specified acoustic performance.

- E. Acoustic Attenuation: STC of _____ calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90, with insulation installed.
- F. Sound Absorption Average (SAA): _____, measured in accordance with ASTM C423 with insulation installed.
- G. Noise Reduction Coefficient (NRC): _____, measured in accordance with ASTM C423 with insulation installed.
- H. Systems Located Outside Building Envelope:
 - 1. Accommodate wind and suction loads and wind uplift without damage <<***in accordance with applicable code; or _____***>>.
 - 2. Accommodate wind and suction loads and wind uplift to resist _____ ***psf (_____ kPa)*** without damage.
 - 3. Thermal Resistance Value: Total ***R-value of _____ (RSI-value of _____)*** with insulation installed.

2.04 COMPONENT PRODUCTS

- A. Linear Metal Pans:
 - 1. Type: Linear pans with <<***reveals; filler strips; or _____***>>; snap-in installation.
 - 2. Applications: Including <<***interior; exterior soffit; and _____***>> installations.
 - 3. Material: Aluminum sheet, ASTM B209/B209M.
 - 4. Configuration: As indicated on drawings.
 - 5. Panel Profile: <<***Paraline I; Paraline II; Paraline III; Paraline Plus; Planx; or _____***>>.
 - 6. Perforation Pattern: _____.
 - 7. Finishes:
 - a. Wood Veneer Finish: USG Ceilings Plus Arboreal veneers.
 - 1) Color: Maple.
 - 2) Color: VG Fir.
 - 3) Color: White Oak.
 - 4) Color: Cherry.
 - 5) Color: Mahogany.
 - 6) Color: Walnut.
 - b. Applied PVC-Free Laminate Finish: Faux-Wood USG Ceilings Plus Saranté laminate.
 - 1) Color: S11 Creme Ovang.
 - 2) Color: S21 Blond Teak.
 - 3) Color: S31 Golden Oak.
 - 4) Color: S12N Valley Maple.
 - 5) Color: S32 CP Maple.
 - 6) Color: S33N2 Honey Anigre.
 - 7) Color: S23N Golden Birch.
 - 8) Color: S13 Red Birch.
 - 9) Color: S25 Natural Ovang.
 - 10) Color: S34 Cherry Anigre.
 - 11) Color: S14N Cinnamon Cherry.
 - 12) Color: S22 Oak Line.
 - 13) Color: S24N Grey Cedar.
 - 14) Color: S35N2 Cherry Birch.
 - 15) Color: S15 Blond Pear.
 - 16) Color: S37 Dark Jatoba.
 - 17) Color: S36N European Cherry.
 - 18) Color: S16N Tan Sawn Oak.
 - 19) Color: S17 Dark Oak.

- 20) Color: S27 Forest Walnut.
- 21) Color: S26 Earth Rosewood.
- 22) Color: S18 Sable Walnut.
- 23) Color: S38 Natural Walnut.
- c. Exposed Metal Finish: Anodized Metals.
 - 1) Color: 058 Brushed Aluminum.
 - 2) Color: 086 Polished Aluminum.
 - 3) Color: Kryolite.
 - 4) Color: Grau.
 - 5) Color: Sateen.
- d. Simulated Wood Painted Finish: Wood Tones.
 - 1) Color: 3467 Beech.
 - 2) Color: 3465 Dark Bamboo.
 - 3) Color: 3466 Light Bamboo.
 - 4) Color: 3468 Dark Cherry.
 - 5) Color: 3469 Light Cherry.
 - 6) Color: 3470 Maple.
 - 7) Color: 3471 Red Oak.
 - 8) Color: 3472 Walnut.
- e. Monochrome Painted Finish: Manufacturer's <<**standard; custom; or** _____>> color.
 - 1) Color: 050 Flat White.
 - 2) Color: 002 Silver Satin.
 - 3) Color: Standard Silver.
 - 4) Color: 1690 Metallic Copper.
 - 5) Color: 1691 Metallic Gold.
 - 6) Color: 1652 Metallic Oyster.
- 8. Acoustical Backer: Manufacturer's standard <<**non-woven fabric; plastic-wrapped fiberglass; and** _____>>; as required to achieve specified acoustic performance.
- 9. Spacing: _____ **inch (_____ mm)** reveal between panels.
- 10. Filler Strip: Manufacturer's standard <<**recessed; flush; or** _____>> strip to fill space between panels.
- 11. Products:
 - a. USG Corporation; Paraline I Linear Metal Systems: www.usg.com/ceilings/#sle.
 - b. USG Corporation; Paraline II Linear Metal Systems: www.usg.com/ceilings/#sle.
 - c. USG Corporation; Paraline III Linear Metal Systems: www.usg.com/ceilings/#sle.
 - d. USG Corporation; Paraline Plus Linear Metal Systems: www.usg.com/ceilings/#sle.
 - e. USG Corporation; Planx Linear Metal Systems: www.usg.com/ceilings/#sle.
 - f. _____.
 - g. Substitutions: <<**See Section 01 6000 - Product Requirements; or Not permitted**>>.
- B. Individual Linear Metal Baffles: Single baffle elements attached to underside of suspension members.
 - 1. Profile: <<**Beam; Blade; or** _____>>-shaped.
 - 2. Spacing: <<**As indicated on drawings; _____ inches between baffles (_____ mm between baffles)**>>.
 - 3. Material: Aluminum sheet, ASTM B209/B209M.
 - 4. Perforations Pattern: _____.
 - 5. Finishes:
 - a. Exposed Metal Finish: Anodized Metals.
 - 1) Color: 058 Brushed Aluminum.
 - 2) Color: 086 Polished Aluminum.
 - b. Monochrome Painted Finish: Manufacturer's <<**standard; custom; or** _____>> color.

- 1) Color: 050 Flat White.
 - 2) Color: 002 Silver Satin.
 - 3) Color: 3708 Matte White.
6. Attachment Accessories: Manufacturer's standard attachment and jointing clips, splices, and end plugs.
 7. Products:
 - a. USG Corporation; Paraline Baffles Linear Ceiling System:
www.usg.com/ceilings/#sle.
 - b. _____.
 - c. _____.
 - d. Substitutions: <<See Section 01 6000 - Product Requirements; or **Not permitted**>>.
- C. Linear Metal Baffle Assemblies: Multiple baffle elements assembled into panels (cassettes) and attached to underside of suspension members.
1. Baffle Profiles: <<***As indicated on drawings; Manufacturer's standard; or _____***>>.
 2. Cassette Configuration: <<***As indicated on drawings; or _____***>>.
 3. Spacing Between Cassettes: <<***As indicated on drawings; _____ inches between cassettes (_____ mm between cassettes)***>>.
 4. Material: Aluminum sheet, ASTM B209/B209M.
 5. Perforations Pattern: _____.
 6. Finishes:
 - a. Applied PVC-Free Laminate Finish: Faux-Wood USG Ceilings Plus Saranté laminate.
 - 1) Color: S22 Oak Line.
 - 2) Color: S36N European Cherry.
 - 3) Color: S37 Dark Jatoba.
 - b. Monochrome Painted Finish: Manufacturer's <<***standard; custom; or _____***>> color.
 - 1) Color: Blanco Mat.
 - 2) Color: Standard Silver.
 - 3) Color: Matte White.
 - 4) Color: _____.
 7. Installation: Design system to allow every cassette to provide access to ceiling plenum. Panels designed for progressive access are not permitted.
 8. Mounting Assemblies: Manufacturer's standard backer channels attached to back of cassettes.
 - a. Mount heavy-duty torsion springs on backer channels to allow downward movement of baffles without potential for damage to baffle face or hinge assembly. Do not attach springs directly to individual baffles.
 - b. Use the number of backer bars required to transfer the dead load of each cassette to the supporting grid within its structural capabilities.
 9. Sound-Absorptive Backer: Manufacturer's standard "Ultrasorb" recycled cotton fiber material, factory-laminated to backside of the perforated panels in sufficient thickness to achieve specified NRC rating for the panels.
 - a. Installation: Fill-in; inside each baffle.
 - b. Installation: Lay-in; on top of each cassette.
 - c. Thickness, Density, and Acoustical Performance: <<***1 inch thick with density of 1.5 pcf, for NRC 0.75 (25.4 mm thick with density of 24 kg/cu m, for NRC 0.75); 1 inch thick with density of 3.0 pcf, for NRC 0.80 (25.4 mm thick with density of 48 kg/cu m for NRC 0.80); 1 inch thick with density of 6.0 pcf, for NRC 0.85 (2.54 mm thick with density of 96 kg/cu m, for NRC 0.85); 1-1/2 inches thick with density of 1.5 pcf, for NRC 0.90 (38 mm thick with density of 24 kg/cu m, for NRC 0.90); 2 inches thick with density of 4.0 pcf, for NRC 1.15 (51 mm thick with density of 48 kg/cu m, for NRC 1.15); _____ inches thick with density of _____ pcf for NRC _____ (_____ mm thick with density of _____ kg/cu m, for NRC _____)***>>.

10. Products:
 - a. USG Corporation; Barz Design Solutions: www.usg.com/ceilings/#sle.
 - b. _____.
 - c. _____.
 - d. Substitutions: <<**See Section 01 6000 - Product Requirements; or Not permitted**>>.

- D. Standard Perforations: Regular patterns of factory-machined, various size <<**circular; square; obround; custom; rectangular; or _____**>> openings at 90, 45, or 60 degrees, with unperforated borders at edges of panels.

- E. Perforated Imagery Enhancements: Images created by a pattern of factory-machined perforations in metal pan panels.
 1. Original Image Type: <<**Digital photograph; Digital art; Digital logo; or _____**>>, <<**positive; negative; or _____**>> image.
 2. Original Image Source: To be provided by **Owner**.
 3. Executed Image Resolution: <<**Hi-Res; Med-Res; Low-Res; or _____**>>, as defined by manufacturer.
 4. Executed Size: Image canvas size (panel layout and number of panels) is indicated on drawings.
 5. Panel Canvas: <<_____>>.
 6. Products:
 - a. USG Corporation; Parti Perforated Imagery: www.usg.com/ceilings/#sle.
 - b. _____.
 - c. _____.
 - d. Substitutions: <<**See Section 01 6000 - Product Requirements; or Not permitted**>>.

- F. Suspension Systems:
 1. Metal Suspension Systems: See Section **09 5100 - Acoustical Ceilings - USG**.
 2. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with <<**perimeter moldings; hold down clips; stabilizer bars; seismic clips; splices; and _____**>> as required.
 - a. Stabilizer Bars: Manufacturer's <<**standard; locking; accessible; and _____**>> bars designed to provide system rigidity in large module applications.
 - 1) Lengths: As applicable to module dimensions, main tee spacing, and panel sizes of ceiling assemblies specified.
 - b. Materials:
 - 1) Subgirt Members: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with <<**G90/Z275; G60/Z180; or _____**>> coating; formed to resist imposed loads and to provide attachment for linear ceiling and accessories.
 - 2) Steel Grid: ASTM A653/A653M <<**G30; G60; G90; or _____**>> coating, unless otherwise indicated.
 - 3) Aluminum Grid: Aluminum sheet, ASTM B209/B209M.
 - 4) Stainless Steel Grid: ASTM A666, Type 304.
 3. Carrier Systems: Dedicated concealed support systems for linear metal ceilings:
 - a. Application(s): <<**Seismic; or _____**>>.
 - b. Products:
 - 1) USG Corporation; Paralock Main<< **and Cross; or None - N/A**>> Tees: www.usg.com/ceilings/#sle.
 - 2) USG Corporation; Paralock Plus Main Tees: www.usg.com/ceilings/#sle.
 - 3) USG Corporation; Planx Main<< **and Cross; or None - N/A**>> Tees: www.usg.com/ceilings/#sle.
 - 4) USG Corporation; Symmetrical Carriers: www.usg.com/ceilings/#sle.
 - 5) USG Corporation; Curvatura Vault and Valley Tees with Flat Channel Carriers: www.usg.com/ceilings/#sle.

- 6) _____.
- 7) Substitutions: <<See Section 01 6000 - Product Requirements; or **Not permitted**>>.
4. Exposed Acoustical Suspension System: Hot-dipped galvanized steel grid and cap.
- Application(s): <<**Seismic**; or _____>>.
 - Structural Classification: <<**Intermediate-duty; Heavy-duty**; or _____>>, when tested in accordance with ASTM C635/C635M.
 - Recycled Materials Content: Classified as containing greater than 50% total recycled content. Available for specific sizes and lengths.
 - Profile: Tee; <<**15/16 inch (24 mm)**; _____ inch (_____ mm)>> face width.
 - Finish: <<**Baked enamel**; or _____>>.
 - Color: <<**As indicated on drawings; White; To be selected from manufacturer's standards**; or _____>>.
 - Products:
 - USG Corporation; DX 15/16 Inch Suspension System: www.usg.com/ceilings/#sle.
 - _____.
 - _____.
 - Substitutions: <<See Section 01 6000 - Product Requirements; or **Not permitted**>>.
5. Semi-Concealed Acoustical Suspension System: Hot-dipped galvanized steel grid and cap.
- Application(s): <<**Seismic**; or _____>>.
 - Structural Classification: <<**Intermediate-duty; Heavy-duty**; or _____>>, when tested in accordance with ASTM C635/C635M.
 - Recycled Materials Content: Classified as containing greater than 50% total recycled content. Available for specific sizes and lengths.
 - Profile: Tee; <<**15/16 inch (24 mm)**; _____ inch (_____ mm)>> face width.
 - Finish: <<**Baked enamel**; or _____>>.
 - Color: <<**As indicated on drawings; Black; White; To be selected from manufacturer's standards**; or _____>>.
 - Cassettes Installation: Baffles installed from below by inserting torsion springs into slots in faces of main runners of ceiling grid.
 - Products:
 - USG Corporation; 15/16 Inch suspension system, with CP slotted main tees and DX cross tees: www.usg.com/ceilings/#sle.
 - _____.
 - _____.
 - Substitutions: <<See Section 01 6000 - Product Requirements; or **Not permitted**>>.
6. Open-Cell Grid-Only System: Hot-dipped galvanized steel main and cross tee ceiling system, powder coat finish.
- Application(s): <<**Seismic**; or _____>>.
 - Sizes: **2 foot by 2 foot (610 by 610 mm)** module, with <<**24 by 24 inches (610 by 610 mm); 24 by 24 inches (610 by 610 mm); 24 by 24 inches (610 by 610 mm); 24 by 24 inches (610 by 610 mm); 24 by 48 inches (610 by 610 mm); 24 by 48 inches (610 by 1219 mm); 24 by 48 inches (610 by 1219 mm); 610 by 1219 mm (24 by 48 inches); 48 by 48 inches; 1219 by 1219 mm; 48 by 48 inches (1219 by 1219 mm); 1219 by 1219 mm (48 by 48 inches); _____ inches; _____ mm; _____ inches (_____ mm); and _____ mm (_____ inches)**>> cells.
 - Grid Profile: <<**15/16 inch GWDX (24 mm GWDX)**; _____ inch (_____ mm)>> ceiling grid.
 - Finish: 100 percent, 360 degrees tee coverage.

- e. Color: <<As indicated on drawings; **White; Silver Satin; Black; To be selected from manufacturer's standards; or _____**>>.
 - f. Accessories: Provide manufacturer's standard <<**perimeter trim; and _____**>>.
 - g. Products:
 - 1) USG Corporation; Gridware Open Cell Decorative System: www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<See Section 01 6000 - Product Requirements; or **Not permitted**>>.
7. Drywall Grid Suspension Systems: G40 hot-dipped galvanized steel grid system of main << **and cross; or None - N/A**>> tees, <<**suspended from structure above; or _____**>>.
- a. Application(s): <<**Seismic; or _____**>>.
 - b. Products:
 - 1) USG Corporation; DWSS Drywall Suspension System - Flat Ceilings: www.usg.com/ceilings/#sle.
 - 2) USG Corporation; DWSS Drywall Suspension System - Curved Ceilings: www.usg.com/ceilings/#sle.
 - 3) _____.
 - 4) _____.
 - 5) Substitutions: <<See Section 01 6000 - Product Requirements; or **Not permitted**>>.
- G. Moldings and Trim:
- 1. Edge Molding << **Expansion Joints,; or None - N/A**>> and Splices: Same material, thickness, and finish as metal pan panels, unless otherwise indicated.
 - 2. Perimeter (Wall) Moldings: <<**Same metal and finish as grid; Aluminum; or _____**>>.
 - a. Size: As required for installation conditions << **and specified Seismic Design Category; and _____; or None - N/A**>>.
 - b. Angle Moldings: L-shaped, for mounting at same elevation as face of grid.
 - c. Shadow Moldings: Shaped to create a perimeter reveal.
 - d. Channel Moldings: U-shaped, for hold-down type installations.
 - e. Gaskets For Perimeter Moldings: Closed-cell foam, factory-applied to molding.
 - f. Acoustical Sealant For Perimeter Moldings: Non-hardening, non-skinning, for use in conjunction with suspended ceiling system.
 - 3. Metal Transition Trim: Steel or extruded aluminum; provide attachment clips, splice plates and preformed corner pieces for complete trim system:
 - a. Trim Height: <<**2-1/4 inch (57 mm); 4 inch (102 mm); 6 inch (152 mm); 8 inch (203 mm); 10 inch (254 mm); _____ inch (_____ mm)**>>.
 - b. Finish: <<**Baked enamel; or _____**>>.
 - c. Color: <<**White; or _____**>>.
 - d. Products:
 - 1) USG Corporation; Compasso Elite Transitions - Acoustical to Acoustical: www.usg.com/ceilings/#sle.
 - 2) USG Corporation; Compasso Elite Transitions - Acoustical to Drywall: www.usg.com/ceilings/#sle.
 - 3) USG Corporation; Compasso Elite Drywall: www.usg.com/ceilings/#sle.
 - 4) _____.
 - 5) Substitutions: <<See Section 01 6000 - Product Requirements; or **Not permitted**>>.
 - 4. Metal Perimeter Trim for "Cloud" Suspension Systems: Steel or extruded aluminum; provide attachment clips, splice plates, and preformed corner pieces for complete trim system.

- a. Trim Height: <<2-1/4 inch (57 mm); 4 inch (102 mm); 6 inch (152 mm); 8 inch (203 mm); 10 inch (254 mm); _____ inch (_____ mm)>>.
 - b. Finish: <<Baked enamel; or _____>>.
 - c. Color: <<White; or _____>>.
 - d. Products:
 - 1) USG Corporation; Compasso Suspension Trim - Standard: www.usg.com/ceilings/#sle.
 - 2) USG Corporation; Compasso Suspension Trim - Slim: www.usg.com/ceilings/#sle.
 - 3) USG Corporation; Compasso Suspension Trim - Elite: www.usg.com/ceilings/#sle.
 - 4) USG Corporation; Compasso Suspension Trim - Elite with Island Accent Lighting: www.usg.com/ceilings/#sle.
 - 5) _____.
 - 6) Substitutions: <<See Section 01 6000 - Product Requirements; or Not permitted>>.
5. Metal Curtain Pocket Trim: Steel or extruded aluminum; provide attachment clips, splice plates and preformed corner pieces for complete trim system:
- a. Trim Height: <<2-1/4 inch (57 mm); 4 inch (102 mm); 6 inch (152 mm); 8 inch (203 mm); 10 inch (254 mm); _____ inch (_____ mm)>>.
 - b. Finish: <<Baked enamel; or _____>>.
 - c. Color: <<White; or _____>>.
 - d. Products:
 - 1) USG Corporation; Compasso Elite Curtain Pocket: www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<See Section 01 6000 - Product Requirements; or Not permitted>>.

2.05 ACCESSORIES

- A. Support Channels, Carriers, and Hangers: <<Galvanized; or Primed>> steel; size and type to suit application<<, seismic requirements,; or None - N/A>> and ceiling system flatness requirement specified.
- B. Suspension Wire<< and Rope; or None - N/A>>: Size and type as required for application<<, seismic requirements,; or None - N/A>> and ceiling system flatness requirement specified.
 1. Concealed Suspension:
 - a. Suspension Wire: Steel, annealed, <<galvanized; or plain>> finish, <<12 gage, 0.0808 (2.05 mm); 9 gage, 0.1144 inch (2.91 mm); _____ gage, _____ inch (_____ mm)>> diameter.
 2. Exposed (To View) Suspension:
 - a. Suspension Wire: Stainless steel, <<18 gage, 0.0403 (1.02 mm); _____ gage, _____ inch (_____ mm)>> diameter, complying with ASTM A580/A580M.
 - b. Suspension Rope: 1/32 inch (0.8 mm) stainless steel rope wire complying with ASTM A492, with <<loop and crimp-end; turnbuckle; wire crimp; or _____>> connection.
- C. Compression Posts: 3.4 inch (19 mm) nominal diameter EMT conduit, lengths as required by installation conditions.
 1. Adapters: Manufacturer's standard adapters designed to connect post to suspension carrier member.
- D. Hold-Down Clips: Manufacturer's standard clips to suit application.
- E. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.
- F. Miscellaneous Accessories: Manufacturer's standard <<splice plates; filler strips; perimeter trim; and _____>> required for complete installation of system.

- G. Edge Molding << **Expansion Joints;**; or **None - N/A**>> and Splices: Same material, thickness, and finish as linear panels.
- H. End Caps: << **Formed metal; Molded plastic;** or _____>>; same color and finish as sight-exposed surfaces of linear panels.
- I. Metal Baffle Grid Attachment Clips: Manufacturer's standard for attachment to main or cross tees.
- J. Acoustical Insulation: << **Specified in Section 07 2100;** or **ASTM C665, friction fit type, unfaced batts**>>.
 - 1. Thickness: << **2 inch (51 mm); 6 inch (152 mm);** _____ inch (_____ mm)>>.
 - 2. Size: To fit acoustical suspension system.
- K. Thermal Insulation: Specified in << **Section 07 2100;** or _____>>.
- L. Thermal Insulation: ASTM C665, preformed << **glass; or mineral**>> fiber << **batt; or roll**>>; << **friction fit;** or **None - N/A**>> complying with the following:
 - 1. Thermal Resistance: **R-value (RSI-value)** of _____ (_____).
 - 2. << **Batt; or Roll**>> Size: _____ by _____ inch (_____ by _____ mm).
 - 3. Facing: Unfaced.
 - 4. Facing: Faced on one side with << **foil; asphalt treated Kraft paper; black plastic; mesh reinforced Kraft paper;** or _____>>.
- M. Gypsum Board and Framing Materials: See Section **09 2116**.
- N. Touch-Up Paint for Exposed Surfaces: Type and color to match linear panels and suspension system grid and trim elements.
- O. Touch-Up Paint For Concealed Galvanized Items: << **Zinc rich; Zinc oxide;** or _____>> type, as recommended by ceiling system manufacturer.

2.06 FABRICATION

- A. Shop cut linear panels to accommodate mechanical and electrical items.
- B. Factory-form internal and external corners of same material, thickness, finish, and profile to match exposed linear panels << **back brace internal corners;** or **None - N/A**>>.
- C. Fabricate components to allow access to ceiling plenum as required.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.
- C. Verify that field measurements are as << **indicated; indicated on shop drawings; instructed by the manufacturer;** or _____>>.
- D. Start of installation constitutes acceptance of project conditions.

3.02 PREPARATION

- A. Coordinate the location of hangers with other work.
- B. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- C. Install after major above-ceiling work is complete.

3.03 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with << **ASTM C636/C636M; ASTM E580/E580M; manufacturer's instructions;** and _____>> and as supplemented by this section.
- B. Install hangers and inserts coordinated with overhead work. Provide additional hangers and supports as required.
- C. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of << **1:360; 1:240;** or _____>>.

- D. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.
- E. Locate system on room axis according to reflected ceiling plan.
- F. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- G. Seismic Suspension System, Seismic Design Category C: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Maintain a **3/8 inch (9 mm)** clearance between grid ends and wall.
- H. Seismic Suspension System, Seismic Design Categories D, E, F: Hang suspension system with grid ends attached to the perimeter molding on two adjacent walls; on opposite walls, maintain a **3/4 inch (19 mm)** clearance between grid ends and wall.
- I. Where ducts, facility services, or equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers **<< and related carrying channels; or None - N/A >>** to span the extra distance.
- J. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- K. Support fixture loads using supplementary hangers located within **<<6 inches (152 mm); ____ inches (____ mm)>>** of each corner, or support components independently.
- L. Do not eccentrically load system or induce rotation of runners.
- M. Form expansion joints **<<as detailed; or ____ >>**. Form to accommodate plus or minus **<<1 inch (25 mm); ____ inch (____ mm)>>** movement. Maintain visual closure.
- N. Install unopposed tee attachment clips at appropriate locations to enable installation of acoustical units in an ashlar pattern.
- O. Edge Moldings: Install at intersection of ceiling and vertical surfaces and penetrations, using components of maximum length, set level. **<< Provide edge moldings at junction with other ceiling finishes.; or None - N/A >><< Miter corners.; or None - N/A >><< Provide preformed edge closures to match bullnosed cornered partitions.; or None - N/A >>**
 1. Install **<<in bed of acoustical sealant; or with continuous gasket>>**.
 2. Use longest practical lengths.
 3. **<<Miter; Overlap; or Overlap and rivet>>** corners.

3.04 INSTALLATION - LINEAR METAL COMPONENTS:

- A. Install linear panels **<< baffles.; or None - N/A >>** and other system components in accordance with manufacturer's instructions.
- B. Stagger end joints minimum **12 inches (300 mm)**.
- C. Align end joints.
- D. Butt interior end joints tight.
- E. Set exterior end joints with **<<1/16 inch (2 mm); ____ inch (____ mm)>>** gap for expansion and contraction.
- F. Provide **<<expansion; and control>>** joints to accommodate plus or minus **<<1 inch (25 mm); ____ inch (____ mm)>>** movement and maintain visual closure.
- G. **<<Field miter corners; Install prefabricated corner sections; or ____ >>** at changes in panel direction.
- H. Install filler strips between linear panels at **<<interior; and exterior>>** locations.
- I. Install edge moldings at junctions with other finishes and at vertical surfaces; use maximum piece lengths.
- J. Where bullnose masonry units occur, install radiused closures to fit edge molding.
- K. Install end caps at sight-exposed ends of linear panels.

- L. Exercise care when site cutting sight-exposed finished components to ensure surface finish is not defaced.
- M. Insulation: Install above panel members; fit tight between grid members <<place insulation with facing side down;; place insulation with facing side up; or None - N/A>>.

3.05 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: <<1/8 inch in 10 feet (3 mm in 3 m); ____ inch in 10 feet (____ mm in 3 m)>>.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: <<2; or ____>> degrees.
- C. Maximum Variation From Dimensioned Position: <<1/4 inch (6 mm); ____ inch (____ mm)>>.

3.06 CLEANING

- A. Clean <<polished; reflective; or ____>> surfaces.
- B. Replace damaged or abraded components.

3.07 SCHEDULES

- A. Main Foyer: Box beam design, no space closures, polished chrome finish; 9 feet (2.75 m) above finished floor; refer to reflected ceiling plan.
- B. Sloped Ceilings in Stair Wells: Flat panel shape, bullnosed edge, acoustic insulation above, recessed black filler, flat white surface finish.

END OF SECTION