

SECTION 09 5400
SPECIALTY CEILINGS - USG

OPTIONAL CHECKLIST BELOW CONTAINS MUCH INFORMATION THAT MAY AID SELECTION OF APPROPRIATE PRODUCTS. IT IS NOT A SUBSTITUTE FOR MORE COMPLETE INFORMATION AVAILABLE FROM USG.

IT ALSO INCLUDES A CONFIGURATION TOOL FOR USG CEILING ASSEMBLIES. USING IT IS HIGHLY RECOMMENDED.

OPTIONAL CHECKLIST

INSTRUCTIONS

Using the preselection tools found below allows the specifier to find ceiling solutions that meet the desired combination of specialty ceiling panels and suspension grids. Built-in linking scheme in the CONFIGURATION TOOL suggests compatible components and characteristics, and, on the other hand, shows which ceiling assembly solutions are impossible due to a combination of incompatible and or unavailable components.

CONFIGURATION TOOL needs to be used (from top to bottom) each time a different ceiling assembly needs to be defined.

Alternatively, it's possible to build the section using a partially or entirely manual approach.

CONFIGURATION TOOL PROCEDURE

Step 1. Select the specialty ceiling panel type.

Step 2. Select suspension grid that is compatible with the specialty ceiling panels

Step 3. If the component products selected are compatible with each other (there are no conflicts that would prevent them for being properly integrated into an assembly), scroll down to Part 2 of this Section and record the decisions in the Ceiling Assembly sequences. These include choices for specialty ceiling panels and suspension/support grids or framing required. This single-place description allows the contractor to properly bid and procure the major components of the acoustical ceiling.

Pro Tip 1: Ceiling Assembly sequences include as a default the suggested designation (e.g. "APC-1"). This designation **MUST** match the designation indicated on drawings. It is this designation that ties the drawings and specification together. The choice has an option for user-generated designation.

Pro Tip 2: When choices in Step 3 have been made, appropriate selections will be automatically activated in the component product lists in Part 2 of the Section. Only those items "in the project" will thereby be included.

Step 4. Change the View of the section from "Normal" to "Selected" to review content that will be included in the section. Go back to "Normal" view if items seem to be missing from lists of components.

CEILING ASSEMBLIES REQUIRED IN PROJECT:

Select to configure and include the first ceiling assembly.

Specialty Panels:

- Billo 3-Dimensional Panels.
- Curvatura 3-Dimensional Ceiling System.
- Geometrix 3-Dimensional Ceiling System.
- Radians 3-Dimensional Ceiling System.
- Topo 3-Dimensional Suspension System.
- Transluents Infill Panels.
- Transluents Canopies.
- WireWorks Open Cell Ceiling Panels.

Selection of the panel type above narrows down the choice of compatible suspension systems.

Suspension System (Face Profile) Selection:
 Curvatura Exposed Suspension System.
 Radians Concealed Suspension System.
 Direct Suspension.
 Donn DX 15/16-inch Suspension System.
 Donn Centricitee DXT 9/16-inch Suspension System <<***None - N/A; or, except for square edge panels larger than 24 inch by 24 inch***>>.
 Donn Fineline DXF Suspension System.
 Donn Fineline 1/8 DXFF Suspension System.
 Donn Identitee DXI Suspension System.
 Gridware Open Cell Decorative System.
 Topo Suspension System.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Specialty ceiling panels and systems.
- B. Suspended channel accents.
- C. Formed metal wall panel system.
- D. Metal suspension system.

1.02 RELATED REQUIREMENTS

- A. Section **01 6116 - Volatile Organic Compound (VOC) Content Restrictions**.
- B. Section **03 1000 - Concrete Forming and Accessories**: Placement of special anchors or inserts for suspension system.
- C. Section **03 3000 - Cast-in-Place Concrete**: Placement of special anchors or inserts for suspension system.
- D. Section **05 3100 - Steel Decking**: Placement of special anchors or inserts for suspension system.
- E. Section **07 2100 - Thermal Insulation**.
- F. Section **08 3100 - Access Doors and Panels**: Access panels.
- G. Section **09 2116 - Gypsum Board Assemblies**: Gypsum board and metal framing products.
- H. Section **09 2116 - Gypsum Board Assemblies**: Acoustical insulation.
- I. Section **09 5100 - Acoustical Ceilings - USG**: Metal suspension systems.

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 A580/A580M - Standard Specification for Stainless Steel Wire; 2018.
- C. ASTM A492 - Standard Specification for Stainless Steel Rope Wire; 1995 (Reapproved 2013).
- 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 B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2020.

- H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- I. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2017.
- J. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- K. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- M. 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.
- N. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2019.

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. Sequence work to ensure ceilings are not installed until building is enclosed, dust generating activities have terminated, and overhead work is completed.

1.05 SUBMITTALS

- A. See Section **01 3000 - Administrative Requirements**, for submittal procedures.
- B. Shop Drawings: Indicate **<<grid layout and related dimensioning; attachment of specialty ceiling panels to grid; accessory attachments; junctions with other ceiling finishes; mechanical and electrical items installed in the ceiling; and ____>>**.
- C. Product Data: Provide data on **<<specialty ceiling components; suspension system components; and ____>>**.
- D. Samples: Submit **<<two; or ____>>** **<<full size; ____ by ____ inch (____ by ____ mm); or ____>>** samples illustrating material and finish of specialty ceiling components.
- E. Samples: Submit **<<two; or ____>>** samples each, **____ inches (____ mm)** long, of suspension system **<<main runner; cross runner; stabilizer bars; perimeter molding; and ____>>**.
- F. Test Reports: Certified test data from an independent test agency verifying that panels meet specified requirements for **<<fire; acoustical; seismic; and ____>>** performance.
- G. Manufacturer's Installation Instructions: Indicate **<<special procedures; perimeter conditions requiring special attention; and ____>>**.
- H. Designer's Qualification Statement.
- I. Manufacturer's Qualification Statement.
- J. Installer's Qualification Statement.
- K. Maintenance Materials: Furnish the following for **Owner's** use in maintenance of project.
 1. See Section **01 6000 - Product Requirements**, for additional provisions.
 2. Specialty Ceiling System Components: Provide a quantity equal to **<<2 percent; or ____ percent>>** of total product installed.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications for Seismic Design: 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 ceiling manufacturer.

1.07 MOCK-UP

- A. Provide _____ **feet (_____ m)** by _____ **feet (_____ m)** mock-up including ceiling panels, suspension members, trim, and installation accessories.
- B. See Section **01 4000 - Quality Requirements** for additional requirements.
- C. Locate <<**where directed; as indicated on drawings; or _____**>>.
- D. Mock-up <<**may; or may not**>> remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver specialty ceiling components to project site in original, unopened packages.
- B. Store in fully enclosed space, flat, level and off the floor.

1.09 FIELD CONDITIONS

- A. Do not install specialty ceiling system until wet construction work is complete and permanent heat and air conditioning is installed and operating.

PART 2 PRODUCTS

2.01 SPECIALTY CEILING ASSEMBLIES

- A. Refer to <<**Room Finish Schedule; Reflected Ceiling Plans; and _____**>> on drawings for additional ceiling assemblies information.
- B. Specialty Ceiling Assembly Type <<**SC-1; or _____**>>:
 - 1. Panels: <<**Billo 3-Dimensional Panels; Curvatura 3-Dimensional Panels; Geometrix 3-Dimensional Panels; Radians 3-Dimensional Panels; Topo 3-Dimensional Panels; Transluents Infill Panels; Transluents Canopies; WireWorks Open Cell Ceiling Panels; or _____**>><< **Item No. _____; or None - N/A**>>.
 - a. Color: <<**White; As indicated on drawings; or _____**>>.
 - b. Flat Panel Sizes: <<**24 inches by 24 inches (2 by 2) panel (600 mm by 600 mm); 24 by 72 inches (2 by 6) panel (610 mm by 1829 mm); _____ inchex by _____ inches (_____ mm by _____ mm)**>>.
 - c. Stock Curved Panel Sizes and Radia:
 - 1) 4-Foot Arc Lengths: <<**As indicated on drawings; To be selected from manufacturer's standards; 92-inch radius; 61-inch radius; 46-inch radius; 31-inch radius; and _____**>>.
 - 2) 6-Foot Arc Lengths: <<**As indicated on drawings; To be selected from manufacturer's standards; 138-inch radius; 92-inch radius; 69-inch radius; 46-inch radius; and _____**>>.
 - 3) 8-Foot Arc Lengths: <<**As indicated on drawings; To be selected from manufacturer's standards; 183-inch radius; 122-inch radius; 92-inch radius; 61-inch radius; and _____**>>.
 - 4) 10-Foot Arc Lengths: <<**As indicated on drawings; To be selected from manufacturer's standards; 229-inch radius; 153-inch radius; 115-inch radius; 77-inch radius; and _____**>>.
 - d. Standard Perforations Pattern: <<**CS03002; CS04002; CS04003; CD04004; CS05003; CS05006; CS06302; CS06303; CD06305; CD06310; CS06310; CD06319; CE07814; CS07814; CE07906; CS09405; CD09410; CS09420; CE09420; CS11708; CD11717; CS12505; CD12510; CE12510; CE12520; CS12520; CS18801; CD18803; CS18806; CE18820; CS18820; CE18833; CD18839; CE19735; CS20105; CS20123; CS25012; CS25020; CE25030;**>>.

CD25039; CE25058; CE31246; CS37507; CS37509; CD37515; CS37520; CE37533; CD37539; CS50009; CS50020; CE50020; CD50039; CD50055; CE50063; CS62520; CD62540; CS75028; CS125031; CE125031; SS18814; SS25011; SS25025; SS37511; SS39415; SS39460; SS43134; SS50011; SS50025; SS50070; SS75036; OS06317; OS06333; OS09420; OS12523; OS12537; OS18827; OD18827; RS12518; RS12527; RS15657; RS25021; or RS25041>>.

- e. Parti Custom Multi-Panel Perforations: On portions of metal pan ceilings indicated on drawings.
- f. Pixels Perforated Imagery: On portions of metal pan ceilings indicated on drawings.
2. Standard Suspension Grid: Specified in Section <<**09 5100; or 09 5400**>>.
3. Standard Suspension System: <<**Donn DX; Centricitee DXT; Fineline DXF; Fineline DXFF; or Identitee DXI**>> suspension system.
4. Specialty Suspension System: <<**Curvatura Suspension System; Direct Suspension; Gridware Open Cell Decorative System; Radians Suspension System; Topo Suspension System; or _____**>>.

2.02 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 or less; 75 or less; or _____**>>, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.03 ACOUSTICAL WALL ASSEMBLIES

- A. Acoustical Wall Assembly Type <<**AW-1; or _____**>>:
 1. Wallforms Wall System.

2.04 COMPONENT PRODUCTS

- A. Panels:
 1. Three-Dimensional Curved Panels: Preformed three-dimensional curved luminous polycarbonate lay-in panels.
 - a. Panel Color: <<**_____; or As indicated on drawings**>>.
 - b. Accessories: Provide manufacturer's standard <<**hold-down clips; edge trim; and _____**>>.
 - c. Products:
 - 1) USG Corporation; Billo 3-Dimensional Panels: www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<**See Section 01 6000 - Product Requirements; or Not permitted**>>.
 2. Three-Dimensional Curved Panels: Preformed three-dimensional curved translucent and opaque lay-in panels.
 - a. Panel Material: _____.
 - b. Panel Thickness: <<**0.04 inch (1 mm); _____ inch (_____ mm)**>>, nominal.
 - c. Panel Color: <<**_____; or As indicated on drawings**>>.
 - d. Accessories: Provide manufacturer's standard <<**hold-down clips; edge trim; and _____**>>.
 - e. Products:

- 1) USG Corporation; Topo 3-Dimensional Suspension System:
www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
3. Preformed Curved Canopy Panels: Translucent panels with four pre-drilled support points per panel.
- a. Material: Acrylic.
 - b. Material: Polycarbonate.
 - c. Material: Rigid vinyl<<**thermoformed; or None - N/A**>>.
 - d. Material: Polyethylene terephthalate (PET or PETG); PVC-free.
 - e. Color: <<**As selected from manufacturer's standard colors; As indicated; or _____**>>.
 - f. Pattern: <<**As selected from manufacturer's standard patterns; As indicated; or _____**>>.
 - g. Accessories: Provide manufacturer's standard <<**mounting hardware; attachment devices; and _____**>>.
 - h. Products:
 - 1) USG Corporation; Transluents Canopies: www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
4. Curved Metal Panels: Flexible lay-in <<**perforated; smooth; expanded; or _____**>> metal panels.
- a. Panel Material: <<**Aluminum; Steel; or _____**>>.
 - b. Panel Thickness: _____ *inch* (_____ *mm*).
 - c. Panel Color/Finish: << _____; or **As indicated on drawings**>>.
 - d. NRC Range: _____ to _____, determined in accordance with ASTM E1264.
 - e. Finishes:
 - 1) Exposed Metal Finish: <<**As indicated on drawings; To be selected from manufacturer's standards; Kryolite; Grau; Sateen; or _____**>>.
 - 2) Simulated Wood Painted Finish: Wood Tones dye-sublimation process on polyester powder coat substrate applied to panels.
 - (a) Color: <<**As indicated on drawings; To be selected from manufacturer's standards; Beech (3467); Dark Bamboo (3465); Dark Cherry (3468); Light Bamboo (3466); Light Cherry (3469); Maple (3470); Red Oak (3471); Walnut (3472); or _____**>>.
 - 3) Monochrome Painted Finish: Manufacturer's <<**standard; custom; or _____**>> color.
 - (a) Color: <<**As indicated on drawings; To be selected from manufacturer's standards; Flat White; Silver Satin; Metallic Copper; Metallic Gold; Metallic Oyster; or _____**>>.
 - 4) Stamped Diamondflex Finish: <<**As indicated on drawings; To be selected from manufacturer's standards; Louvered Bright White; Louvered Bright Silver; Sheer Bright White; Sheer Bright Silver; or _____**>>.
 - f. Acoustical Fabric: <<**Manufacturer's standard non-woven fabric; or _____**>>.
 - g. Accessories: Provide manufacturer's standard <<**stabilizer bars; panel splices; edge trim; and _____**>>.
 - h. Products:
 - 1) USG Corporation; Curvatura 3-Dimensional Ceiling System:
www.usg.com/ceilings/#sle.
 - 2) _____.

- 3) _____.
- 4) Substitutions: **<<Not permitted; or See Section 01 6000 - Product Requirements>>**.
5. 3-Dimensional Metal Lay-In Panels: Preformed aluminum, multi-shaped, **<<unperforated; perforated; or _____>>** lay-in metal panels.
- Panel Size: **<<24 by 24 inch (610 by 610 mm); _____ by _____ inches (_____ by _____ mm)>>**.
 - Panel Shapes: As indicated on drawings.
 - Panel Shapes: **<<Flat; Wedge; Outside Wedge Corner; Inside Wedge Corner; and _____>>**.
 - Panel Depths: As indicated on drawings.
 - Panel Depths: **<<1-1/4 inches (32 mm); 1-1/4 inches (32 mm); 1-1/4 inches (32 mm); 1-1/4 inches (32 mm); 2-1/4 inches (57 mm); 2-1/4 inches (57 mm); 2-1/4 inches (57 mm); 2-1/4 inches (57 mm); 3-1/4 inches (83 mm); 3-1/4 inches (83 mm); 3-1/4 inches (83 mm); _____ inches; _____ mm; _____ inches (_____ mm); and _____ mm (_____ inches)>>**.
 - NRC Range: _____ to _____, determined in accordance with ASTM E1264.
 - Finishes:
 - Monochrome Painted Finish: Manufacturer's **<<standard; custom; or _____>>** color.
 - Color: **<<As indicated on drawings; To be selected from manufacturer's standards; Flat White; Silver Satin; or _____>>**.
 - Acoustical Fabric: **<<Manufacturer's standard non-woven fabric; or _____>>**.
 - Accessories: Provide manufacturer's standard **<<edge trim; and _____>>**.
 - Products:
 - USG Corporation; Geometrix 3-Dimensional Metal Panels; www.usg.com/#sle.
 - _____.
 - _____.
 - Substitutions: **<<Not permitted; or See Section 01 6000 - Product Requirements>>**.
6. Open-Cell Panels: Wire grid lay-in panels.
- Application(s): _____.
 - Open Cell Ceiling Panels: **<<As indicated on drawings; To be selected from manufacturer's standards; 1-inch by 1-inch cells; 2-inch by 2-inch cells; 3-inch by 3-inch cells; 4-inch by 4-inch cells; and _____>>**.
 - Wire Thickness: **<<1/8 inch (3.2 mm); _____ inch (_____ mm)>>**.
 - Open Cell Forms: **<<As indicated on drawings; To be selected from manufacturer's standards; Weave pattern; Ripple pattern; Small Wave pattern; Big Wave pattern; and _____>>**.
 - Wire Thickness: **<<3/16 inch (4.8 mm); _____ inch (_____ mm)>>**.
 - Panel Size: **<<24 by 24 inch (610 by 610 mm); _____ by _____ inches (_____ by _____ mm)>>**.
 - Recycled Materials Content: Classified as containing greater than 50 percent total recycled content.
 - Finish: Powder coat.
 - Products:
 - USG Corporation; WireWorks Open Cell Ceiling Panels: www.usg.com/ceilings/#sle.
 - _____.
 - _____.
 - Substitutions: **<<Not permitted; or See Section 01 6000 - Product Requirements>>**.
7. Curved Four-Sided Panel System with Concealed Grid: Pre-engineered, curved **<<unperforated; perforated; or _____>>** metal modular pan torsion-spring ceiling

system with **<<wood veneer; applied PVC-free laminate; exposed metal; painted; or _____>>** finish; concealed suspension system.

- a. Application(s): _____.
- b. Classification: ASTM E1264 Type.
- c. Panel Forming: Die-form panels with a minimum **1-1/4 inch (31.75 mm)** return edge on each side. Attach aligning clips to return edges with countersunk chamfered machine rivets through countersunk holes so that rivet heads are flush with faces of panel returns. Exposed fasteners are not permitted.
- d. Panel Material: Single sheet of aluminum, selected for surface flatness, smoothness and freedom from surface blemishes; complying with ASTM B209/B209M, Alloy 3105, with up to 90 percent recycled content.
- e. Panel Size(s): **<<As indicated on drawings; or _____>>**.
- f. Panel Edge Profile: Square, for butt installation.
- g. Installation: Design system to allow every panel to provide access to ceiling plenum. Panels designed for progressive access are not permitted.
- h. Mounting Assemblies: Mount heavy-duty torsion springs to aligning clips to allow downward access without potential for damage to panel face or hinge assembly. Do not attach springs directly to return edges of panels.
- i. Finishes:
 - 1) Wood Veneer Finish: USG Ceilings Plus Arboreal veneers.
 - (a) Surface: **<<Unperforated; Perforated; or _____>>**.
 - 2) Applied PVC-Free Laminate Finish:
 - (a) Laminates: Faux-Wood USG Ceilings Plus Saranté laminate.
 - (b) Color: **<<As indicated on drawings; To be selected from manufacturer's standards; S-18 Sable Walnut; S-28N Dark Chestnut; S-26 Earth Rosewood; S-38 Natural Walnut; S-27 Forest Walnut; S-17 Dark Oak; S-37 Dark Jatoba; S-24N Grey Cedar; S-36N European Cherry; S-25 Cherry Birch; S-25 Natural Ovang; S-16N Tan Sawn Oak; S-15 Blond Pear; S-33 Bamboo; S-14N Cinnamon Cherry; S-34 Cherry Anigre; S-22 Oak Line; S-13 Red Birch; S-23N Golden Birch; S-12N Valley Maple; S-32 CP Maple; S-31 Golden Oak; S-21 Blond Teak; S-11 Creme Ovang; or _____>>**.
 - 3) Exposed Metal Finish: **<<As indicated on drawings; To be selected from manufacturer's standards; Kryolite; Grau; Sateen; or _____>>**.
 - 4) Monochrome Painted Finish: Manufacturer's **<<standard; custom; or _____>>** color.
 - (a) Color: **<<As indicated on drawings; To be selected from manufacturer's standards; Standard Silver; Blanco Mat; Flat White; or _____>>**.
- j. 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.
 - 1) 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 ___)>>**.
- k. Sound-Absorptive Backer: Manufacturer's standard "SoundTex" recycled fiber fleece material factory-laminated to the backside of the perforated panels to achieve NRC 0.75 for the panels.

- 1) Material: Nonwoven synthetic fabric, **0.011 inch (0.27 mm)** thick.
- I. Products:
 - 1) USG Corporation; Radians: www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: **<<Not permitted; or See Section 01 6000 - Product Requirements>>**.
- B. 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.
- C. 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: **<<Curvatura Metal Panels; Geometix Metal Panels; and _____>>**.
 6. Products:
 - a. USG Corporation; Parti Perforated Imagery: www.usg.com/ceilings/#sle.
 - b. USG Corporation; Pixels Perforated Imagery: www.usg.com/ceilings/#sle.
 - c. _____.
 - d. _____.
 - e. Substitutions: **<<Not permitted; or See Section 01 6000 - Product Requirements>>**.
- D. Standard Suspension Systems:
 1. 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) Steel Grid: ASTM A653/A653M **<<G30; G60; G90; or _____>>** coating, unless otherwise indicated.
 - 2) Aluminum Grid: Aluminum sheet, ASTM B209/B209M.
 - 3) Stainless Steel Grid: ASTM A666, Type 304.
 3. Exposed Acoustical Suspension System: Hot-dipped galvanized steel grid and cap.
 - a. Application(s): **<<Seismic; or _____>>**.
 - b. Structural Classification: **<<Intermediate-duty; Heavy-duty; or _____>>**, when tested in accordance with ASTM C635/C635M.
 - c. Recycled Materials Content: Classified as containing greater than 50% total recycled content. Available for specific sizes and lengths.
 - d. Profile: Tee; **<<15/16 inch (24 mm); _____ inch (_____ mm)>>** face width.
 - e. Finish: **<<Baked enamel; or _____>>**.
 - f. Color: **<<As indicated on drawings; White; To be selected from manufacturer's standards; or _____>>**.
 - g. Products:

- 1) USG Corporation; DX 15/16 Inch Suspension System:
www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<***Not permitted; or See Section 01 6000 - Product Requirements***>>.
4. Exposed Acoustical Suspension System: Hot-dipped galvanized steel grid and cap.
- a. Application(s): <<***Seismic; or***>>.
 - b. Structural Classification: <<***Intermediate-duty; Heavy-duty; or***>>, when tested in accordance with ASTM C635/C635M.
 - c. Recycled Materials Content: Classified as containing greater than 50% total recycled content. Available for specific sizes and lengths.
 - d. Profile: Tee; <<***9/16 inch (14 mm); _____ inch (_____ mm)***>> face width.
 - e. Finish: <<***Baked enamel; or***>>.
 - f. Color: <<***As indicated on drawings; White; To be selected from manufacturer's standards; or***>>.
 - g. Products:
 - 1) USG Corporation; Centricitee DXT 9/16 Inch Suspension System:
www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<***Not permitted; or See Section 01 6000 - Product Requirements***>>.
5. Exposed Acoustical Suspension System: Hot-dipped galvanized steel grid.
- a. Application(s): <<***Seismic; or***>>.
 - b. Structural Classification: <<***Intermediate-duty; Heavy-duty; or***>>, when tested in accordance with ASTM C635/C635M.
 - c. Recycled Materials Content: Classified as containing greater than 50% total recycled content. Available for specific sizes and lengths.
 - d. Profile: Slotted Reveal Tee; <<***9/16 inch (14 mm); _____ inch (_____ mm)***>> face width, with 1/4-inch wide center reveal.
 - e. Intersections: Mitered.
 - f. Finish: <<***Baked enamel; or***>>.
 - g. Color: <<***As indicated on drawings; White; To be selected from manufacturer's standards; or***>>.
 - h. Products:
 - 1) USG Corporation Fineline DXF Suspension System: www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<***Not permitted; or See Section 01 6000 - Product Requirements***>>.
6. Exposed Acoustical Suspension System: Hot-dipped galvanized steel grid.
- a. Application(s): <<***Seismic; or***>>.
 - b. Structural Classification: <<***Intermediate-duty; Heavy-duty; or***>>, when tested in accordance with ASTM C635/C635M.
 - c. Recycled Materials Content: Classified as containing greater than 50% total recycled content.
 - d. Profile: Slotted Reveal Tee; <<***9/16 inch (14 mm); _____ inch (_____ mm)***>> face width, with 1/8-inch wide center reveal.
 - e. Intersections: Mitered.
 - f. Finish: <<***Baked enamel; or***>>.
 - g. Color: <<***As indicated on drawings; White; To be selected from manufacturer's standards; or***>>.
 - h. Products:

- 1) USG Corporation; Finline DXFF Suspension System:
www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
7. Exposed Suspension System: Hot-dipped galvanized steel grid and cap.
- a. Application(s): <<**Seismic; or _____**>>.
 - b. Structural Classification: <<**Intermediate-duty; Heavy-duty; or _____**>>, when tested in accordance with ASTM C635/C635M.
 - c. Recycled Materials Content: Classified as containing greater than 50% total recycled content.
 - d. Profile: Double reveal Tee; <<**9/16 inch (14 mm); _____ inch (_____ mm)**>> face width.
 - e. Intersections: Seamless reveal.
 - f. Finish: <<**Baked enamel; or _____**>>.
 - g. Color: <<**As indicated on drawings; White; To be selected from manufacturer's standards; or _____**>>.
 - h. Products:
 - 1) USG Corporation; Identitee DXI Suspension System:
www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
- E. Specialty Suspension Systems:
1. 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. Materials:
 - 1) Steel Grid: ASTM A653/A653M <<**G30; G60; G90; or _____**>> coating, unless otherwise indicated.
 - 2) Aluminum Grid: Aluminum sheet, ASTM B209/B209M.
 - 3) Aluminum Grid: Aluminum extrusion, Alloy 6063 T-5 temper, in accordance with ASTM B221 (ASTM B221M).
 2. Exposed Curved Suspension System: Extruded aluminum grid consisting of curved main tees and cross tees.
 - a. Application(s): <<**Seismic; or _____**>>.
 - b. Structural Classification: <<**Light-duty; or _____**>>, when tested in accordance with ASTM C635/C635M.
 - c. Recycled Materials Content: Classified as containing greater than 50% total recycled content.
 - d. Profile: Tee; **9/16inch (14 mm)** face width.
 - e. Finish: <<**Baked enamel; or _____**>>.
 - f. Color: <<**As indicated on drawings; White; To be selected from manufacturer's standards; or _____**>>.
 - g. Utility Circles: Manufacturer's standard accessories pre-engineered to accommodate additional lighting and utility access.
 - h. Edge Trim: Manufacturer's standard.
 - i. Products:
 - 1) USG Corporation; Topo Suspension System: www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.

- 4) Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
3. Exposed Curved Suspension System: Hot-dipped galvanized steel grid consisting of vault and valley main tees and straight cross tees, with integral hold-down tabs.
- Application(s): <<**Seismic; or _____**>>.
 - Structural Classification: <<**Intermediate-duty; Heavy-duty; or _____**>>, when tested in accordance with ASTM C635/C635M.
 - Configuration: <<**One-directional; Two-directional; or _____**>>.
 - 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)** face width.
 - Finish: <<**Baked enamel; or _____**>>.
 - Color: <<**As indicated on drawings; White; To be selected from manufacturer's standards; or _____**>>.
 - Edge Trim: Manufacturer's standard.
 - Products:
 - USG Corporation; Curvatura Suspension System: www.usg.com/ceilings/#sle.
 - _____.
 - _____.
 - Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
4. 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 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: <<**9/16 inch GWDXT (14 mm GWDXT); 15/16 inch GWDX (24 mm GWDX); 1-1/2 inch GWDXW (38 mm GWDXW); _____ inch (_____ mm)**>> ceiling grid.
 - Finish: 100 percent tee coverage.
 - Color: <<**As indicated on drawings; White; To be selected from manufacturer's standards; or _____**>>.
 - Accessories: Provide manufacturer's standard <<**perimeter trim; and _____**>>.
 - Products:
 - USG Corporation; Gridware Open Cell Decorative System: www.usg.com/ceilings/#sle.
 - _____.
 - _____.
 - Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
5. Custom Concealed Ceiling Suspension System: Hot-dipped galvanized steel custom engineered curved grid.
- Application(s): <<**Seismic; or _____**>>.
 - Structural Classification: Heavy Duty, when tested in accordance with ASTM C635/C635M.
 - Profile: Flat.
 - Finish: <<**Baked enamel; or _____**>>.
 - Color: <<**Matte Black; or _____**>>.

- f. Installation: Panels installed from below by inserting torsion springs into slots in faces of main runners of ceiling grid.
 - g. Products:
 - 1) USG Corporation; Radians Grid Suspension System:
www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
- F. Direct Suspension Systems:
- 1. Engineered system for suspending single or multiple canopy panels.
 - a. Application(s): <<**Seismic; or _____**>>.
 - b. Materials: Stainless steel.
 - c. Basic Components: <<**Cable to structure attachment plates; decorative cable; cable to panel attachment plates; and _____**>>
 - d. Optional Components: Include <<**decorative cable escutcheons; panel joiner clips; and _____**>>.
 - e. Finish: No.8, mirror finish
 - f. Brackets
 - g. Medallions:
 - h. Products:
 - 1) USG Corporation; Transluents Canopies Suspension System:
www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
- G. Accent Elements:
- 1. Pre-engineered metal ceiling channels. Hot-dipped galvanized steel shapes.
 - a. Application(s): <<**Seismic; or _____**>>.
 - b. Channel Height: <<**4 inches (101.6 mm); 6 inches (152.4 mm); 8 inches (203.2 mm); _____ inches (_____ mm)**>>.
 - c. Channel Width: _____ inches (_____ mm) with _____ inch (_____ mm) reveal.
 - d. Configuration: <<**As indicated on drawings; To be selected from manufacturer's standards; or _____**>>.
 - e. Installation: Suspend from ceiling using hanger <<**wire; cable; rods; or _____**>>.
 - f. Color/Finish: <<**_____; or As indicated on drawings**>>.
 - g. Accessories: _____.
 - h. Products:
 - 1) USG Corporation; C2 Paired Compasso Channel Accents;
www.usg.com/ceilings/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
- H. Moldings and Trim:
- 1. Edge Molding<<**None - N/A; or, Expansion Joints,**>> 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: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.
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: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.

2.05 ACOUSTICAL WALL SYSTEMS

A. Wall Panels:

- 1. NRC Range: _____ to _____, determined in accordance with ASTM E1264.
- 2. Installation System: Manufacturer's standard horizontal Z-clip support rail.

3. Installation System: Manufacturer's standard pre-slotted galvanized steel hat channels and backer plates.
 - a. Backer Plates: Manufacturer's standard, designed to be attached to metal framing and provide continuous attachment substrate for hat channels.
 - b. Hat Channels: Factory-slotted to receive wall panels' hooks.
 - 1) Metal gage as required to support applied panel loads.
 - 2) Factory-finished matte black.
 - c. Finishes: Matte black on faces of hat channels and backer plates.
4. Modular Wall Panels: Formed **<<perforated; smooth; or _____>>** metal wall panels.
 - a. Panel Material: Aluminum sheet complying with ASTM B209/B209M.
 - b. Panel Size and Configuration: **<<As indicated on drawings; or _____>>**.
 - c. Perforation Pattern: _____.
 - d. Finishes:
 - 1) Wood Veneer Finish: USG Ceilings Plus Arboreal veneers.
 - (a) Surface: **<<Unperforated; Perforated; or _____>>**.
 - (b) Perforation Pattern (with Unperforated Borders): **<<As indicated on drawings; To be selected from manufacturer's standards; or _____>>**.
 - 2) Applied PVC-Free Laminate Finish:
 - (a) Laminates: Faux-Wood USG Ceilings Plus Saranté laminate.
 - (b) Color: **<<As indicated on drawings; To be selected from manufacturer's standards; S-18 Sable Walnut; S-28N Dark Chestnut; S-26 Earth Rosewood; S-38 Natural Walnut; S-27 Forest Walnut; S-17 Dark Oak; S-37 Dark Jatoba; S-24N Grey Cedar; S-36N European Cherry; S-25 Cherry Birch; S-25 Natural Ovang; S-16N Tan Sawn Oak; S-15 Blond Pear; S-33 Bamboo; S-14N Cinnamon Cherry; S-34 Cherry Anigre; S-22 Oak Line; S-13 Red Birch; S-23N Golden Birch; S-12N Valley Maple; S-32 CP Maple; S-31 Golden Oak; S-21 Blond Teak; S-11 Creme Ovang; or _____>>**.
 - 3) Exposed Metal Finish: **<<As indicated on drawings; To be selected from manufacturer's standards; #4 Stainless Steel; 430 Bright Annealed Stainless Steel; Umbra; Kryolite; Grau; Sateen; or _____>>**.
 - 4) Simulated Wood Painted Finish: Timbre Faux Wood.
 - (a) Color: **<<As indicated on drawings; To be selected from manufacturer's standards; Maple; Red Birch; VG Fir; Cherry; Walnut; Mahogany; or _____>>**.
 - 5) Monochrome Painted Finish: Manufacturer's **<<standard; custom; or _____>>** color.
 - (a) Color: **<<As indicated on drawings; To be selected from manufacturer's standards; Silver Standard; Lumin White; Blanco Mat; or _____>>**.
 - e. Trims and Closures: Manufacturer's standard for installation indicated and as required by project conditions.
 - f. 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.
 - 1) 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 ___)>>**.

- g. Sound-Absorptive Backer: Manufacturer's standard "SoundTex" recycled fiber fleece material factory-laminated to the backside of the perforated panels to achieve NRC 0.75 for the panels.
 - 1) Material: Nonwoven synthetic fabric, **0.011 inch (0.27 mm)** thick.
- 5. Accessories: _____.
- 6. Products:
 - a. USG Corporation; Wallforms: www.usg.com/ceilings/#sle.
 - b. _____.
 - c. _____.
 - d. Substitutions: <<**Not permitted; or See Section 01 6000 - Product Requirements**>>.

2.06 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. Hat-Shaped Metal Channels: Steel, <<**22 gage, 0.0299 inch (0.76 mm)**>> _____ **gage**, _____ **inch** (_____ **mm**)>>, minimum.
- C. Suspension Wire<<**None - N/A; or and Rope**>>: 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: 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.
 - b. Suspension Wire: Stainless steel, <<**18 gage, 0.0403 (1.02 mm)**>> _____ **gage**, _____ **inch** (_____ **mm**)>> diameter, complying with ASTM A580/A580M.
 - c. Suspension Rope: **1/32 inch (0.8 mm)** stainless steel rope wire complying with ASTM A492, with <<**loop and crimp-end; turnbuckle; wire crimp; attachment plate; or _____**>> connection.
- D. 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.
- E. Seismic Clips: Manufacturer's standard clips designed to provide a rigid connection between suspension grid tees and wall moldings.
- F. Unopposed Tee Attachment Clip: Manufacturer's standard clip designed to create code-compliant cross tee connections when a cross tee is installed in a main tee without another cross tee directly opposite.
- G. Compasso standard clip
- H. Compasso Celebration clip
- I. Compasso Elite clip
- J. Celebration Compasso Elite clip
- K. Acoustical Insulation: See Section **09 2116**.
- L. 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.

- M. Gypsum Board and Framing Materials: See Section **09 2116**.
- N. Touch-Up Paint for Exposed Surfaces: Type and color to match acoustical units 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.

2.07 FABRICATION

- A. Shop fabricate ceiling<<**None - N/A; or and wall**>> components to the greatest extent possible.
- B. 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. Do not begin installation until after interior wet work is dry.
- E. 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.
- D. Layout ceiling components in pattern according to reflected ceiling plan and as shown on shop drawings.

3.03 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with <<**ASTM C636/C636M; ASTM E580/E580M; and manufacturer's instructions**>> and as supplemented in 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. 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 - SPECIALTY CEILING UNITS

- A. Install in accordance with manufacturer's instructions.
- B. Fit components in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Cut to fit irregular grid and perimeter moldings.
 1. Shape and finish field-cut edges as recommended by manufacturer to match profile of factory edges and finish.
- D. Fit edge trim neatly against abutting surfaces.
- E. Install specialty units level, in uniform plane, and free from twist, warp, and dents.
- F. Where <<**round obstructions; bullnose concrete block corners; and _____**>> occur, provide preformed closures to match perimeter molding.
- G. Lay acoustical insulation for a distance of <<**48 inches (1219 mm); _____ inches (_____ mm)**>> either side of acoustical partitions <<**as indicated; or None - N/A**>>.
- H. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements, and where required by manufacturer.
- I. Install hold-down clips on panels within <<**20 ft (6 m); _____ ft (_____ m)**>> of an exterior door.
- J. Install safety clips on wood veneer panels **2 inches (51 mm)** from outside edge of panel and at **24 inches (610 mm)** on center.
 1. Use wire ties to attach safety clips.
- K. Install wood veneer trim using aluminum L angle to attach to suspended grid system as required for application.

3.05 INSTALLATION - WALL PANELS:

- A. Install in accordance with manufacturer's instructions.
- B. Z-Clip Rail Installation:
 1. Backer Plates: Field-cut plates to lengths required and attach to metal framing using countersunk self-tapping fasteners.
 2. Z-Clip Rails: Field-cut plates to lengths required and attach to <<**solid substrate, shim as required; backer plate; or _____**>>.
- C. Hat-Channel Installation:
 1. Backer Plates: Field-cut plates to lengths required and attach to metal framing using countersunk self-tapping fasteners.
 2. Hat Channels: Field-cut plates to lengths required and attach to <<**solid substrate, shim as required; backer plate; or _____**>>.

- D. Fit wall panel units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around penetrations.
- E. Perimeter Trim: Field-cut trim pieces to lengths required and attach to substrates.
 - 1. Field miter corners at locations indicated or recommended by manufacturer.

3.06 INSTALLATION OF TRANSITION TRIM

- A. After the grids are installed, for each grid end that meets the transition trim, insert one tee attachment clip into the lower and upper bosses and secure the set screw. Leave enough tension for adjustment.
- B. At drywall suspension systems install gypsum panels after the transition trim is installed.
- C. Secure a tee attachment clip to each grid member that will connect to the transition trim. Install one framing screw into the center of the slotted screw hole. Leave enough tension so the attachment clip can be adjusted if needed. Follow manufacturer's instructions when aligning the attachment clip.
- D. Install the splice plates by sliding them into the bosses at the end of each transition trim joint. Loosely tighten the set screws and align the system square and true.

3.07 INSTALLATION OF PERIMETER "CLOUD" TRIM

- A. General:
 - 1. Examine the reflected ceiling layout and carefully plan the layout of the trim on the ceiling grid.
 - 2. Lay trim segments on top of the grid in the desired pattern and temporarily secure them in place.
 - 3. Temporarily splice the segments together.
 - 4. Assemble trim system, arranging the trim into smooth curves.
 - 5. Mark and cut the suspension grid.
 - 6. Install an attachment clip to each cut end of the grid. Attach the clip to trim section segment.
 - 7. Join trim and permanently splice the segments together.
- B. 8-Inch, 10-Inch, and 12-Inch Trim:
 - 1. Support segments by attaching diagonal braces to the installation clips using fasteners recommended by manufacturer. Attach one end of the brace to back of trim segment and the other to the tee. Ensure that the clip remains at 90 degrees to the ceiling plane. Repeat this procedure at 2-foot increments along the entire perimeter of the grid.
 - 2. Attach trim segments to the grid.
- C. Corners:
 - 1. Outside Corners: Slide a permanent splice plate into each side of the preformed outside corner. Attach one side of the outside corner to a trim segment. Connect a trim segment to the other side of the corner and secure with appropriate splice plate.
 - 2. Inside Corners: Follow manufacturer's instructions for installation of pre-formed and welded corners or for field-assembled corners from separate premitered pieces.

3.08 INSTALLATION OF CURTAIN POCKET TRIM

- A. Mounting: Mount curtain pocket trim in accordance with manufacturer's instructions and as appropriate for project conditions:
 - 1. Wall Cleat Mounting:
 - a. Determine the mounting height of the pocket and cleat combination. Mount wall cleats on the perimeter wall at that height.
 - b. Mount cleats at framing stud locations, on the center of the stud flange or face for the length of the pocket.
 - c. Secure cleat and pocket to wall using fasteners appropriate for attachment substrates.
 - d. Hook pocket on the mounting cleats. Use a metal screw for locking pocket to cleat.
 - 2. Hanger Wire Mounting:

- a. Mount using hanger wire located at **16 inches (406 mm)** on center by drilling a **1/4 inch (6 mm)** diameter hole into vertical mounting leg located on top of the extrusion, no more than 48 inches on center. USG recommends 12 gauge hanger wires for this type of installation.
3. Metal Framing Mounting:
 - a. Hang curtain pockets using standard **2-1/2-Inch (64 mm)** metal framing members **48 inches (1219 mm)** on center, maximum, hung from and braced with kickers attached to the underside of the structure.
- B. Continuous Lengths Installation: Use wall cleat, hanger wire or metal framing mounting method specified above. Connect curtain pockets segments with standard system splice plates. Use three (3) splice plates for a tight seamless connection; one located on the top of the pocket and two (2) along the vertical surface.
- C. Corners Installation: For 90-degree turns use manufacturer's pre-engineered inside and outside corners. Position corner segments in place using mounting method selected for the system. Use three (3) splice plates for a tight seamless connection to the main curtain pocket; one located on the top of the pocket and two (2) along the vertical surface.
- D. End Cap Terminations: Use the appropriate end cap for the indicated ceiling integration. Install using self-tapping mini screws in two or three locations depending on the end cap selected.
- E. Partition Wall Termination: Use a single splice plate bent in half at 90-degrees. Mount one flange of the plate to the curtain pocket and mount the other to the partition wall above the ceiling grid wall molding.
- F. Install **<<extension plates; closure plates; and _____>>** in accordance with manufacturer's instructions.
- G. Connection to Suspension Grid: Use clips recommended by manufacturer.

3.09 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.

3.10 CLEANING

- A. Clean and touch up minor finish damage. Remove and replace components that cannot be successfully cleaned and repaired.

END OF SECTION