1. Section 095423
Linear Metal Ceilings - USG
	1. PART 1  GENERAL
		1. SECTION INCLUDES
			1. Linear metal ceilings.
			2. Suspended metal support system and perimeter trim.
2. *The paragraph below is optional text*
	* + 1. Supplementary acoustical insulation over system units.
		1. RELATED REQUIREMENTS
3. *The paragraph below is optional text*
	* + 1. Section 016116 - Volatile Organic Compound (VOC) Content Restrictions.
4. *The paragraph below is optional text*
	* + 1. Section 031000 - Concrete Forms and Accessories:  Execution requirements for placement of attachment anchors to structure above.
5. *The paragraph below is optional text*
	* + 1. Section 033000 - Cast-in-Place Concrete:  Execution requirements for placement of attachment anchors to structure above.
6. *The paragraph below is optional text*
	* + 1. Section 053100 - Steel Decking:  Execution requirements for placement of attachment anchors to structure above.
7. *The paragraph below is optional text*
	* + 1. Section 072100 - Thermal Insulation.
8. *The paragraph below is optional text*
	* + 1. Section 083100 - Access Doors and Panels:  Access panels.
9. *The paragraph below is optional text*
	* + 1. Section 092116 - Gypsum Board Assemblies - USG:  Gypsum board and metal framing products
10. *The paragraph below is optional text*
	* + 1. Section 095100 - Acoustical Ceilings - USG:  Metal suspension system.
11. *The paragraph below is optional text*
	* + 1. Section 211300 - Fire-Suppression Sprinkler Systems:  Sprinkler heads.
12. *The paragraph below is optional text*
	* + 1. Section 233700 - Air Outlets and Inlets:  Air diffusers.
13. *The paragraph below is optional text*
	* + 1. Section 265100 - Interior Lighting:  Luminaires.
14. *The paragraph below is optional text*
	* + 1. Section 265600 - Exterior Lighting:  Luminaires.
15. *The paragraph below is optional text*
	* + 1. Section 275116 - Public Address Systems:  Audio speakers.
16. *The paragraph below is optional text*
	* + 1. Section 284600 - Fire Detection and Alarm:  Fire detection and alarm components in ceiling.
		1. REFERENCE STANDARDS
			1. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
			2. ASTM A492 - Standard Specification for Stainless Steel Rope Wire; 1995 (Reapproved 2019).
			3. ASTM A580/A580M - Standard Specification for Stainless Steel Wire; 2018.
			4. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
			5. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.
			6. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
			7. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2022.
			8. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.
			9. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.
			10. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
			11. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
			12. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
			13. ASTM E413 - Classification for Rating Sound Insulation; 2022.
			14. 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; 2022.
		2. ADMINISTRATIVE REQUIREMENTS
			1. Coordination:  Coordinate work of this section with installation of mechanical and electrical components and with other construction activities affected by work of this section.
			2. Preinstallation Meeting:  Convene one week before starting work of this section.
			3. Sequencing:  Supply hanger clips during steel deck erection.  Supply additional hangers and inserts as required.
		3. SUBMITTALS
			1. Product Data:  Furnish for component profiles.
			2. Shop Drawings:  Indicate reflected ceiling plan.
				1. Seismic Design:  Include seal and signature of design professional on each drawing.
			3. Samples:  Two samples [\_\_\_] by [\_\_\_] inch ([\_\_\_] by [\_\_\_] mm) in size showing color and finish of exposed to view components.
17. *The paragraph below is optional text*
	* + 1. Designer's qualification statement.
18. *The paragraph below is optional text*
	* + 1. Manufacturer's qualification statement.
			2. Installer's qualification statement.
			3. Maintenance Materials:  Furnish the following for Owner's use in maintenance of project.
				1. See Section 016000 - Product Requirements for additional provisions.
				2. Extra Linear Panels:  One, standard length.
		1. QUALITY ASSURANCE
19. *The paragraph below is optional text*
	* + 1. 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.
			2. Manufacturer Qualifications:  Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
			3. Installer Qualifications:  Company specializing in performing the work of this section.
				1. Minimum [\_\_\_\_\_\_\_\_\_\_] years documented experience.
				2. Approved by metal ceiling manufacturer.
20. *The paragraph below is optional text*
	* + 1. Products Requiring Electrical Connection:  Listed and classified by Underwriters Laboratories Inc.
		1. MOCK-UP
21. *The paragraph below is optional text*
	* + 1. Construct [\_\_\_\_\_\_\_\_] mock-up, [\_\_\_\_] feet ([\_\_\_\_] m) long by [\_\_\_\_] feet ([\_\_\_\_] m) wide; include suspension system, panels, closures in mock-up.
22. *The paragraph below is optional text*
	* + 1. See Section 014000 - Quality Requirements for additional requirements.
23. *The paragraph below is optional text*
	* + 1. Locate mock-up where directed.
24. *The paragraph below is optional text*
	* + 1. Mock-up may remain as part of the Work.
		1. DELIVERY, STORAGE, AND HANDLING
			1. Accept factory-finished products on site in manufacturer's unopened factory packaging only; reject opened packages.
			2. Protect factory-finished products from damage to appearance by storing products in manufacturer's unopened factory packaging in dry storage area.
		2. WARRANTY
			1. See Section 017800 - Closeout Submittals for additional warranty requirements.
			2. Provide five year manufacturer warranty; include coverage for corrosion resistance and discoloration of surface finish.
	1. PART 2  PRODUCTS
		1. Linear Metal Ceiling Assemblies
			1. Linear Metal Baffle Assembly Type LMBA-1[ Item No.B103004],[ Item No.B201503],[ Item No.B206008],[ Item No.B208008]:
				1. Baffle Assemblies:  Barz Design Solutions.
				2. Layout:  As indicated on drawings.
				3. Finish Type:

Saranté Colors:  [S22 Oak Line],[S36N European Cherry],[S37 Dark Jatoba].

Painted - On Metal Colors:  [Blanco Mat],[Matte Black],[Silver Satin].

* + - * 1. Standard Perforations Pattern:  [SD07].
				2. Suspension Grid:  Semi-concealed, with CP slotted main tees and DX cross tees.
		1. DESIGN REQUIREMENTS
			1. Design components to ensure light fixtures will not induce eccentric loads.  Where components may induce rotation of ceiling system components, provide stabilizing reinforcement.
		2. PERFORMANCE REQUIREMENTS
			1. Design for maximum deflection of 1/360 of span.
			2. 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.
1. *The paragraph below is optional text*
	* + 1. Seismic Performance:  Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category D, E, or F and complying with the following:
2. *The paragraph below is optional text*
	* + - 1. Local authorities having jurisdiction.
3. *The paragraph below is optional text*
	* + - 1. ICC-ES Evaluation Report No. [\_\_\_\_\_\_\_\_\_\_].
			1. Surface Burning Characteristics:  Flame spread index of  25, smoke developed index of  50, when tested in accordance with ASTM E84.
			2. Acoustic Attenuation:  STC of [\_\_\_\_\_\_\_\_] calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90, with insulation installed.
			3. Sound Absorption Average (SAA):  [\_\_\_\_\_\_], measured in accordance with ASTM C423 with insulation installed.
			4. Noise Reduction Coefficient (NRC):  [\_\_\_\_\_\_], measured in accordance with ASTM C423 with insulation installed.
		1. COMPONENT Products
			1. Linear Metal Baffle Assemblies:  Multiple baffle elements assembled into panels (cassettes) and attached to underside of suspension members.
				1. Baffle Profiles:  [B103004] [B206008] [B208008] [B201503].
				2. Cassette Configuration:  As indicated on drawings.
				3. Spacing Between Cassettes:  As indicated on drawings.
				4. Material:  Aluminum sheet, ASTM B209/B209M.
				5. Perforations Pattern:  [SD07].
				6. Finishes:

Applied PVC-Free Laminate Finish:  Faux-Wood USG Ceilings Plus Saranté laminate.

Color:  S22 Oak Line.

Color:  S15 Blond Pear.

Color:  S37 Dark Jatoba.

Color: Full Sarante offering available as a premium.

Monochrome Painted Finish:  Manufacturer's standard color.

Color:  Blanco Mat.

Color:  Matte Black.

Color:  Silver Satin.

* + - * 1. Installation:  Design system to allow every cassette to provide access to ceiling plenum.  Panels designed for progressive access are not permitted.
				2. Mounting Assemblies:  Manufacturer's standard backer channels attached to back of cassettes.

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.

Use the number of backer bars required to transfer the dead load of each cassette to the supporting grid within its structural capabilities.

* + - * 1. 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.

Installation:  Fill-in; inside each baffle.

Installation:  Lay-in; on top of each cassette.

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. Products:

USG Corporation; Barz Design Solutions:  www.usg.com/ceilings/#sle.

Substitutions:  Not permitted.

* + - 1. Suspension Systems:
				1. Metal Suspension Systems - General:  Complying with ASTM C635/C635M; die cut and interlocking components, with [hold down clips],[perimeter moldings],[seismic clips],[splices],[stabilizer bars] as required.

Materials:

Steel Grid:  ASTM A653/A653M G30 coating, unless otherwise indicated.

* + - * 1. Semi-Concealed Acoustical Suspension System:  Hot-dipped galvanized steel grid and cap.
1. *The paragraph below is optional text*

Application(s):  Seismic.

Structural Classification:  Heavy-duty, 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) face width.

1. *The paragraph below is optional text*

Finish:  Baked enamel.

Color:  Black.

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:  Not permitted.

* + 1. Accessories
			1. Support Channels, Carriers, and Hangers:  Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.
			2. Suspension Wire:  Size and type as required for application, seismic requirements, and ceiling system flatness requirement specified.
				1. Concealed Suspension:

Suspension Wire:  Steel, annealed, galvanized finish, 12 gage, 0.0808 (2.05 mm) diameter.

1. *The paragraph below is optional text*
	* + 1. Hold-Down Clips:  Manufacturer's standard clips to suit application.
2. *The paragraph below is optional text*
	* + 1. Seismic Clips:  Manufacturer's standard clips for seismic conditions and to suit application.
			2. Miscellaneous Accessories:  Manufacturer's standard [filler strips],[perimeter trim],[splice plates] required for complete installation of system.
			3. Edge Molding, Expansion Joints, and Splices:  Same material, thickness, and finish as linear panels.
			4. End Caps:  Formed metal; same color and finish as sight-exposed surfaces of linear panels.
3. *The paragraph below is optional text*
	* + 1. Acoustical Insulation:  ASTM C665 friction fit type, unfaced batts.
4. *The paragraph below is optional text*
	* + - 1. Thickness:  2 inch (51 mm).
5. *The paragraph below is optional text*
	* + - 1. Size:  To fit acoustical suspension system.
			1. Touch-Up Paint for Exposed Surfaces:  Type and color to match linear panels and suspension system grid and trim elements.
	1. PART 3  EXECUTION
		1. EXAMINATION
6. *The paragraph below is optional text*
	* + 1. Verify existing conditions before starting work.
7. *The paragraph below is optional text*
	* + 1. Verify that layout of hangers will not interfere with other work.
8. *The paragraph below is optional text*
	* + 1. Verify that field measurements are as indicated on shop drawings.
9. *The paragraph below is optional text*
	* + 1. Start of installation constitutes acceptance of project conditions.
		1. Preparation
10. *The paragraph below is optional text*
	* + 1. Coordinate the location of hangers with other work.
11. *The paragraph below is optional text*
	* + 1. Provide hanger clips during steel deck erection.  Provide additional hangers and inserts as required.
12. *The paragraph below is optional text*
	* + 1. Install after major above-ceiling work is complete.
		1. INSTALLATION - Suspension System
			1. Install suspension system in accordance with ASTM C636/C636M and manufacturer's instructions and as supplemented by this section.
			2. Install hangers and inserts coordinated with overhead work.  Provide additional hangers and supports as required.
			3. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
			4. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.
			5. Locate system on room axis according to reflected ceiling plan.
			6. 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.
13. *The paragraph below is optional text*
	* + 1. 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.
14. *The paragraph below is optional text*
	* + 1. 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.
			2. Where ducts. facility services, or equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
			3. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
			4. Support fixture loads using supplementary hangers located within 6 inches (152 mm) of each corner, or support components independently.
			5. Do not eccentrically load system or induce rotation of runners.
			6. Form expansion joints as detailed.  Form to accommodate plus or minus 1 inch (25 mm) movement.  Maintain visual closure.
			7. Install unopposed tee attachment clips at appropriate locations to enable installation of acoustical units in an ashlar pattern.
			8. 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. Miter corners. Provide preformed edge closures to match bullnosed cornered partitions.
				1. Install in bed of acoustical sealant.
				2. Use longest practical lengths.
				3. Overlap and rivet corners.
		1. Installation - LINEAR METAL Components:
			1. Install linear panels, baffles, and other system components in accordance with manufacturer's instructions.
			2. Stagger end joints minimum 12 inches (300 mm).
			3. Align end joints.
			4. Butt interior end joints tight.
			5. Set exterior end joints with 1/16 inch (2 mm) gap for expansion and contraction.
			6. Provide expansion joints to accommodate plus or minus 1 inch (25 mm) movement and maintain visual closure.
			7. Field miter corners at changes in panel direction.
			8. Install filler strips between linear panels at interior locations.
			9. Install edge moldings at junctions with other finishes and at vertical surfaces; use maximum piece lengths.
			10. Where bullnose masonry units occur, install radiused closures to fit edge molding.
			11. Install end caps at sight-exposed ends of linear panels.
			12. Exercise care when site cutting sight-exposed finished components to ensure surface finish is not defaced.
			13. Insulation:  Install above panel members; fit tight between grid members ; place insulation with facing side down.
		2. TOLERANCES
			1. Maximum Variation from Flat and Level Surface:  1/8 inch in 10 feet (3 mm in 3 m).
			2. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads:  2 degrees.
			3. Maximum Variation From Dimensioned Position:  1/4 inch (6 mm).
		3. CLEANING
			1. Clean polished surfaces.
			2. Replace damaged or abraded components.
		4. SCHEDULES
15. *The paragraph below is optional text*
	* + 1. Main Foyer:  Box beam design, no space closures, polished chrome finish; 9 feet (2.75 m) above finished floor; refer to reflected ceiling plan.
16. *The paragraph below is optional text*
	* + 1. Sloped Ceilings in Stair Wells:  Flat panel shape, bullnosed edge, acoustic insulation above, recessed black filler, flat white surface finish.
17. END OF SECTION