**SECTION 09 54 21**

**METAL PAN CEILINGS**

**METALWORKS TorsionSpan**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

 Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

**1.2 SUMMARY**

1. Section Includes:
	1. Acoustical metal ceiling panels
	2. Exposed grid suspension system
	3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
	4. Perimeter Trim
2. Related Sections:
	1. Section 09 51 33 - Acoustical Metal Pan Ceilings
		1. 09 51 33 .13 Acoustical Snap-in Metal Pan Ceilings
	2. Section 09 20 00 - Plaster and Gypsum Board
	3. Section 09 53 00 - Acoustical Ceiling Suspension Assemblies
	4. Division 23 – HVAC
	5. Division 26 – Electrical

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect’s review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products that have not been approved by Addenda, the specified products shall be provided without additional compensation.

2. Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters’ Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

**1.3 REFERENCES**

A. American Society for Testing and Materials (ASTM):

* 1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
	2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
	3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
	4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
	5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
	6. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
	7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
	8. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint
1. International Building Code
2. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
3. NFPA 70 National Electrical Code
4. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
5. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components
6. International Association of Plumbing and Mechanical Officials – Seismic Engineer Report
	1. 0244 – Armstrong Single Span Suspension System
7. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings

**1.4 SYSTEM DESCRIPTION**

* Build Type / Finished Form as selected by customer

**1.5 SUBMITTALS**

A. Product Data: Submit manufacturer’s technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of acoustical metal ceilings show locations of items that are to be coordinated with, or supported by the ceilings.

D. Certifications: Manufacturer’s certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.

**1.6 QUALITY ASSURANCE**

1. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.
2. Fire Performance Characteristics: Identify acoustical metal ceiling components with appropriate markings of applicable testing and inspecting organization.
	1. Surface Burning Characteristics: As follows, tested per ASTM E 84
		1. Class A
		2. Class B for Armstrong Reflection Laminate Finishes
3. MetalWorks acoustical panels, as with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.
4. Coordination of Work: Coordinate acoustical metal ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

**1.7 DELIVERY, STORAGE AND HANDLING**

1. Delivered packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
2. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
3. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

**1.8 PROJECT CONDITIONS**

1. Areas to receive ceilings shall be free of construction dust and debris. The ceilings should only be installed in closed and acclimatized buildings. This product is not intended for exterior purposes.
2. Interior systems cannot be used where standing water is present or where moisture will come in direct contact with the ceiling.

**1.9 LEED**

1. Armstrong Ceilings qualify for the following credits:
	1. Category - Material & Resources
		1. MR Credit 2.1, 2.2 - Construction Waste Management Divert 50% or 75% from disposal
		2. MR Credit 4.1, 4.2 - Recycled Content
		3. MR Credit 5.1, 5.2 - Regional Materials (dependent on location)
			1. LEED NC - 10% Extracted, Processed & Manufactured Regionally LEED CI - 20% Manufactured Regionally
	2. Category - Indoor Environmental Quality
		1. EQ Credit 4.1 to 4.6 - Low-Emitting Materials
	3. Category - Innovation and Design Process
		1. ID Credit - Acoustic Performance

**1.10 WARRANTY**

A. Acoustical Metal Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:

1. Acoustical Metal Panels: Sagging and warping

2. Grid System: Rusting and manufacturer’s defects

1. Warranty Period:
2. Acoustical Metal panels: One (1) year from date of substantial completion
3. Grid: Ten years from date of substantial completion

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

**1.11 MAINTENANCE**

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Metal Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

**PART 2 – PRODUCTS**

Attention Design Professional: Please edit Part 2 based on your project needs. Select product attributes and acceptable product item (s) that fit with the requirements of your project. Delete all items from the specification that do not relate to your project needs. Please refer to the Armstrong website for additional ceilings, suspension systems, perimeter trim options, and accessories. The related guide specifications for each of these items are available on the Armstrong website.

**2.1 MANUFACTURERS**

A. Metal Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

 1. Armstrong World Industries, Inc.

**2.2.1 ACOUSTICAL METAL PANEL UNITS**

1. Acoustical Panels Type AMP-1:
2. Surface Texture: Smooth
3. Composition: Aluminum (0.040”)
4. Color: Whitelume, Silverlume, Gun Metal, Satin Anodized, Lacquer Mill, Brushalume
5. Finish: **Reflection;** Artic Maple, Natural Maple, Rock Maple, Light Cherry, Natural Oak, Pecan, Wild Cherry, Mineral Forest, Walnut
6. Size: (Size) Custom; 24” wide with custom lengths to 120”
7. Edge Profile: Torsion spring for interface with TorsionSpan Main Beam
8. Perforation Option: M1 (Unperforated), M14 (Rg 3205), M15 (Rd 1612), M16 (Rd 1607), M17 (Rv 3223), M18 (Rd 3210), M19 (Rg 3220)
9. Noise Reduction Coefficient (NRC): ASTM C 423

|  |
| --- |
| Perforation - NRC w\1” fiberglass infill |
| 1. M14 – 0.85
 | 1. M17 – 0.90
 |
| 1. M15 – 0.90
 | 1. M18 – 0.85
 |
| 1. M16 – 0.80
 | 1. M19 – 0.90
 |
| Perforation - NRC w\acoustical fleece |
| 1. M14 – 0.55
 | 1. M17 – 0.75
 |
| 1. M15 – 0.70
 | 1. M18 – 0.65
 |
| 1. M16 – 0.70
 | 1. M19 – 0.75
 |

1. Flame Spread: ASTM E 84; Class A, **Reflection** **Finishes** Class B
2. Light Reflectance (LR) White Panel: ASTM E 1477; 0.77
3. Dimensional Stability: HumiGuard Plus
4. Recycle Content: 25% and up to 98%
5. Acceptable Product: MetalWorks TorsionSpan™, (Selected Item Number) as manufactured by Armstrong World Industries
6. Accessories:
	1. BioAcoustic Infill Panel (item 5823)
	2. 1” Fiberglass Infill ( item 8200100)

**2.3.1 METAL SUSPENSION SYSTEMS**

1. Metal Suspension System: Armstrong SingleSpan 15/16” Main Beam Suspension System
	1. Composition: Hot Dipped Galvanized Steel
	2. Color: Coordinate with selected panel color
	3. Profile Height: Main Beam 2-7/16”, Cross-tee 1-1/16” with XL² end clip
	4. Profile: PeakForm
	5. Duty Classification: ASTM C635; Heavy, Intermediate and Light Duty
	6. Flange: 15/16”
	7. Recycle Content: 63%
	8. Acceptable Product: SingleSpan Prelude PeakForm Plus item 7221, and Cross-tee item XL7328 as manufactured by Armstrong World Industries
2. Accessories:
	1. Structural Angle Molding - 1” X 2” item SWA9820HRC for White or SWA9820BL for Black
	2. Lateral Support Bar – item LSB10HRC
	3. Cross Tee Adapter Clip – item XTAC
	4. Torsion spring Clip – item 7222
	5. Floating Perimeter – item 7131
	6. Screw – #8 x 1-1/4” for attachment of Structural Wall Angle to studs 16” or 24” O\C
	7. Screw – #8 x ¾” for attachment of XTAC to main beam and wall angle
3. Components: All components to be commercial quality hot dipped galvanized steel as per ASTM A653. Main beams and cross tees are double-web steel construction with exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.
4. Additional Accessories:
	1. Provide accessories for exposed flange of the same width as required of the installation; refer to the Armstrong website for access to the Molding Accessories data page.
		* 1. <http://www.armstrong.com/commceilingsna/>
5. Seismic Accessories Required
	1. Provide seismic accessories for exposed flange of the same width as required of the installation; refer to the Armstrong website for access to the Seismic RX Accessories data page.
		* 1. <http://www.armstrong.com/commceilingsna/>

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer’s printed recommendations.

**3.2 PREPARATION**

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

**3.3 INSTALLATION**

1. Follow manufacturer installation instructions for MetalWorks TorsionSpring, literature item BPLA-297833-724, Down Lighting BPLA-293030-521, Exterior BPLA-297922-921
2. Panels with certain product finishes or characteristics, e.g., Sequels™ or standard WHA, SIA, MYA painted are part of our MetalWorks™ FASTPeel ™ Panel which come standard with our easier-to-remove protective film.

**3.4 ADJUSTING AND CLEANING**

1. Replace damaged and broken panels.
2. Clean exposed surfaces of acoustical metal ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer’s instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.

###### END OF SECTION