**Armstrong World Industries, Inc.**

### Ceiling & Suspension System Specification

**Please understand that you are responsible for the accuracy of all project specifications, including any Armstrong guide specifications that you use.**

**ARMSTRONG SHALL NOT BE LIABLE FOR ANY DAMAGES ARISING OUT OF THE USE OF ANY OF ITS GUIDE SPECIFICATIONS.**

**SECTION 09 50 00**

### 09 54 46 FELTWORKS™ Blades Acoustical Panels

### 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. Non-Woven layered and formed Polyester felt fiber ceiling panels
	2. Wire hangers, fasteners, main runners, cross tees, wall angle moldings and accessories.
2. Related Sections:
	1. Section 09 53 00 - Acoustical Ceiling Suspension Assembly
	2. Section 09 20 00 - Plaster and Gypsum Board
	3. Section 09 22 16 - Non-Structural Metal Framing
	4. Section 01 81 13 - Sustainable Design Requirements
	5. Section 01 81 19 - Indoor Air Quality Requirements
	6. Divisions 23 (15) - HVAC
	7. Division 26 (16) Sections - Electrical Work
3. Alternates
	1. Prior Approval: Unless otherwise provided for in the Contract documents, submit proposed product substitutions 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 and acceptance. Approved products will be set forth by the Addenda. If a substitution is included in a Bid and is not approved by an Addendum, the specified products shall be provided as in place of the substitute without additional compensation.
	2. Submittals, which 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); panel design, size, composition, color, and finish; suspension system component profiles and sizes; compliance with the referenced standards.

### 1.3 REFERENCES

1. American Society for Testing and Materials (ASTM):
	1. ASTM A641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
	2. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot- Dip Process.
	3. ASTM A1008 Standard Specification for Steel, Sheet, and Cold Rolled Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
	4. ASTM C635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
	5. ASTM C636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
	6. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
	7. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
	8. ASTM E580 Application of Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Restraint.
	9. ASTM C423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
	10. ASTM E795 Standard Practices for Mounting Test Specimens During Sound Absorption Tests
	11. ASTM E 1264 Classification for Acoustical Ceiling Products.
	12. International Building Code
	13. ASHRAE Standard 62 1 2004 Ventilation for Acceptable Indoor Air Quality
	14. California Department of Public Health CDPH/EHLB Emission Standard Method Version 1.2 2017
	15. California Green Building Standards Code Cal Green Title 24
	16. NFPA 70 National Electrical Code
	17. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
	18. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components
	19. International Code Council-Evaluation Services Report - Seismic Engineer Report
		1. ESR 1289 - Armstrong Drywall Suspension
	20. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings
	21. Underwriters Laboratories Green Guard
	22. International Living Building Challenge

### 1.4 SUBMITTALS

1. **Shop Drawings**: Provide layout including panel type and components used in the assembly of the ceiling. Show locations of items that are to be coordinated with, or supported by the ceiling.
2. **Installation Instructions**: Submit manufacturer’s installation instructions as referenced in Part three, Installation.
3. **Samples:** Minimum 6 inch x 6 inch sample of the colors selected in the ceiling design, include manufacturer sample of suspension components.
4. **Product Data:** Submit manufacturer’s technical data for each type of ceiling unit and suspension system required.
5. **Certifications:** Manufacturer’s certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.
6. **Non-Conformance:** All products not conforming to the requirements of this specification and or the manufacturer’s published values are to be disposed. The Contractor performing the work will replace with approved product at their expense.

### 1.5 QUALITY ASSURANCE

1. Single-Source Responsibility: Provide ceiling panel units and suspension system hardware by a single manufacturer.
2. Fire Performance Characteristics: Identify ceiling components with appropriate markings of applicable testing and inspecting organization.
	1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with Class A products.
		1. Flame Spread: 25 or less
		2. Smoke Developed: 450 or less
3. Fire Sprinklers: Ceiling systems may obstruct or Skew the planned water distribution pattern of fire sprinkler. In addition to creating a possible delaying or accelerating the activation of the sprinkler of fire detection system. Consult with a fire protection engineer for guidance.
4. Coordination of Work: Coordinate ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

### 1.6 DELIVERY, STORAGE, AND HANDLING

1. Deliver acoustical ceiling units to project site in original, unopened 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.

### 1.7 PROJECT CONDITIONS

1. Space Enclosure:
	1. HumiGuard Plus Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Products with HumiGuard Plus performance and hot dipped galvanized steel suspension systems can be installed up to 120°F (49°C) and in spaces before the building is enclosed, where HVAC systems are cycled or not operating. Cannot be used in exterior applications where standing water is present or where moisture will come in direct contact with the ceiling.

### 1.8 WARRANTY

1. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period.
2. Warranty Period:
	1. Acoustical panels: One (1) year from date of substantial completion
	2. Suspension:
		1. Washer and magnets One (1) year from the date of substantial completion
		2. T-bar suspension Ten (10) years from date of substantial completion
3. 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.

### 1.9 SUSTAINABLE MATERIALS

1. The GREENGUARD Certification Program gives assurance that products designed for use in indoor spaces meet strict chemical emissions limits, which contribute to the creation of healthier interiors. GREENGUARD Certified products meet stringent chemical emissions requirements, such as being screened for more than 10,000 volatile organic compounds (VOCs).
2. Health Product Declaration. The end use product has a published, complete Health Product Declaration with disclosure at a minimum of 1000ppm of known hazards in compliance with the Health Product Declaration open Standard.
3. Declare Label. The end use product has a published Declare label by the International Living Future Institute with disclosure of 100 ppm with a designation of Red List Free or Compliant (less than 1% proprietary ingredients).
4. Low Emitting products with VOC emissions data. Preference will also be given to manufacturers that can provide emissions data showing their products meet CDHP Standard Method v1.2 (Section 01350).
5. Life cycle analysis. Products that have communicated lifecycle data through Environmental Product Declarations (EPDs) will be preferred.
6. Products meeting LEED V4 requirements.

### 1.10 MAINTENANCE

1. 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. Ceiling Units: Furnish quality of full-size units equal to 2.0 percent of amount installed.
	2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 1.0 percent of amount installed.

*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 the FELTWORKS panels selected for your project. Delete all items from the specification that do not relate to your project needs. Please refer to the Armstrong website (*[*Click here to link to the Armstrong Ceilings website*](https://www.armstrongceilings.com/commercial/en-us/)*.*

### PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

1. Basis of Design FELTWORKS:
	1. Armstrong World Industries, Inc.
2. Suspension Systems:
	1. Armstrong World Industries, Inc.

### 2.2.0 CEILING UNITS

1. Ceiling Panel:
	1. Surface Texture: Soft
	2. Composition: Non-woven layered and formed Polyester felt (PET) fiber
	3. Color: White, Beige, Light Grey Dark Grey and Black
	4. Edge Profile: Square
	5. Light Reflectance (LR) White Panel: ASTM E 1477; 0.78
	6. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label
	7. Green Guard Gold Certified
	8. Sizes (*Select appropriate panel size*):
		1. 48” X 98” X 1”
		2. Special Panel Sizes available:
			1. Width 18”-54” x Length 18”-120”
	9. Acoustical Performance based on Noise Reduction Coefficient ASTM C 423 (NRC)

|  |  |  |
| --- | --- | --- |
| Mounting Methods | Thickness | NRC |
| Adhesive | 1” | 0.75 |
| Screw to 7/8” metal furring |  | 0.80 |
| Magnet to 7/8” metal furring |  | 0.85 |
| Screw or magnet to 1-1/2” metal furring |  | 0.90 |
| Screw or magnet to drywall grid |  | 0.90 |

* 1. Flame Spread: Class A
	2. Dimensional Stability: HumiGuard Plus.
	3. Acceptable Product: FELTWORKS as manufactured by Armstrong World Industries.

For information regarding the FELTWORKS product line, contact *Armstrong Sales Representative Name here, contact number: 123-345-4567, email* here@armstrongceilings.com

### 2.2.1 SUSPENSION SYSTEMS

1. **Drywall Suspension Components**: All main beams and cross tees shall be commercial quality hot dipped galvanized steel as per ASTM A653. Main beams and cross tees are double-web steel construction with 1-1/2” inch type exposed flange design. Exposed surfaces chemically cleansed no capping, galvanized steel. Main beams and cross tees shall have rotary stitching.
	1. Structural Classification: ASTM C635 (Heavy Duty).
	2. Acceptable Product: Listed Below as manufactured by Armstrong World Industries, Inc.
		1. Item HD8906 - 12’ Drywall Main Beam
		2. Item XL8926 - 2’ Drywall Suspension Tee
	3. Clips
		1. Item QSUTC QuickStix Uptight Clips ( layout dependent)
2. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
3. Wire for Hangers and Ties: ASTM A641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least times-three design load, but not less than 12 gauge.
4. Accessories: *Ordered Separately Based on Layout*
	* 1. Item 6488 - Washers Mill Finish (paintable), Black
		2. Item 6489 - #8 x 1-7/8" Screws for washer installation Mill Finish (paintable), Black
		3. Item 6526 – Magnets
		4. Item 6527 #8 x 1" Screws for magnet installation
5. **Metal Furring**: Steel channel/hat channel 20-guage 7/8” galvanized steel. Installation to structure is the responsibility of the design team to provide guidance on the architectural plans or by the construction professional installing the framing.
6. **Adhesive Installation**: Armstrong Ceilings and Wall System recommends Henry® 237B AcoustiGum or TiteBond GREENchoice Acoustical Ceiling Tile Adhesive. Follow the adhesive manufactures instructions for preparation and Armstrong FELTWORKS installation instructions for application on the panel.

### PART 3 - EXECUTION

### 3.1 EXAMINATION

1. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out.
2. Proper designs for both supply air and return air, maintenance of the HVAC filters and building interior space are essential to minimize soiling. Before starting the HVAC system, make sure supply air is properly filtered and the building interior is free of construction dust.

### 3.2 PREPARATION

1. 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.

### 3.3 INSTALLATION

1. Install suspension system and panels in compliance with ASTM C636, ASTM E580, with the approval of the authorities having jurisdiction, and in accordance with the manufacturer’s FELTWORKS Installation Instructions.

### 3.4 ADJUSTING AND CLEANING

1. Replace damaged and broken panels.
2. Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer’s instructions for cleaning for minor finish blemishes.

### END OF SECTION