**SECTION 09 54 00**

**CastWorks Metaphors Ceiling Panels
Glass-Fiber Reinforced Gypsum (GRG)**

**PART 1 – GENERAL**

* 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. **SUMMARY**
1. Section Includes
	1. Ceiling panels
	2. Exposed grid suspension system; main runners, cross tees,
	3. Wire hangers, fasteners, wall angle moldings, and accessories
2. Related Sections
	1. Section 09 27 00 – Plaster Fabrications
	2. Section 09 50 00 – Ceilings
	3. Section 09 54 00 – Specialty Ceilings
	4. Section 09 54 33 – Decorative Panel Ceilings
	5. Section 09 56 13 – Textured Ceilings
3. 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 pre-approved by the architect and included in the Addenda, the originally 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; Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.
	3. **REFERENCES**
4. 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 C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
	7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
	8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
	9. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint
	10. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems
	11. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
	12. ASTM E 1264 Classification for Acoustical Ceiling Products
5. International Building Code
6. ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality
7. NFPA 70 National Electrical Code
8. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
9. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components
10. International Code Council-Evaluation Services Report - Seismic Engineer Report
	1. ESR 1308 - Armstrong Suspension Systems
11. International Association of Plumbing and Mechanical Officials - Seismic Engineer Report
	1. 0244 - Armstrong Single Span Suspension System
12. California Department of Public Health CDPH/EHLB/Standard Method v1.2 2017
13. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings
14. International Well Building Standard
15. Living Building Challenge
	1. **SYSTEM DESCRIPTION**
16. Continuous/Wall-to-wall
	1. **SUBMITTALS**
17. Product Data: Submit manufacturer's [technical data](https://www.armstrongceilings.com/content/dam/armstrongceilings/commercial/north-america/data-sheets/castworks-metaphors-data-sheet.pdf) for each type of ceiling unit and suspension system required.
18. Samples: Minimum [3-inch x 3-inch sample](https://www.armstrongceilings.com/commercial/en/samples/order-samples.html#lineId=32794) of specified panel finish; 8-inch-long samples of exposed wall molding and suspension system, including main runner and cross tee.
19. Shop Drawings: Layout and details of ceiling panels showing locations of items that are to be coordinated with or supported by the ceilings.
	1. **SUSTAINABLE MATERIALS**
20. Transparency: Manufacturers will be given preference when they provide documentation to support sustainable requirements for the following: Material ingredient transparency, Removal of Red List Ingredients per LBCV3, Life Cycle impact information, Low-Emitting Materials, and Clean Air performance.
	1. [Health Product Declaration (HPD](https://www.armstrongceilings.com/content/dam/armstrongceilings/commercial/north-america/hpds/castworks-metaphors-hpd.pdf)). 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.
	2. [Declare Label.](https://www.armstrongceilings.com/content/dam/armstrongceilings/commercial/north-america/certificates/castworks-metaphors-declare.pdf)  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).
	3. Low Emitting products with [VOC emissions data.](https://www.armstrongceilings.com/content/dam/armstrongceilings/commercial/north-america/certificates/metaphors-voc-certificate.pdf) Preference will be given to manufacturers that can provide emissions data showing their products meet any of the following: CDPH/EHLB/Standard Method v1.2-2017; Indoor Air Quality Certified to SCS-105 v4.2-2023 [Gold VOC Certificate OR Clearchem]
	4. Life cycle analysis. Products that have communicated lifecycle data through [Environmental Product Declarations (EPDs)](https://www.armstrongceilings.com/content/dam/armstrongceilings/commercial/north-america/epds/castworks-grg-gfrg-epd.pdf) will be preferred.
	5. **QUALITY ASSURANCE**
21. Single-Source Responsibility: Provide ceiling panel units and grid components by a single manufacturer to ensure fit and function.
22. Installer Qualifications: Company specializing in performing specified work type, a minimum of three years of documented experience, and approved by the manufacturer.
23. Fire Performance Characteristics: Identify ceiling components with appropriate markings of applicable testing and inspecting organization.
24. Surface Burning Characteristics: Tested per ASTM E 84 and complying with ASTM E 1264 Classification.
	1. **DELIVERY, STORAGE, AND HANDLING**
25. Deliver 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.
26. Before installing ceiling units, permit them to reach room temperature and a stabilized moisture content.
27. Handle ceiling units carefully to avoid chipping edges or damaging units in any way.
	1. **PROJECT CONDITIONS**
28. Space Enclosure: All ceiling products and suspension systems must be installed and maintained in accordance with Armstrong written [installation instructions](https://www.armstrongceilings.com/content/dam/armstrongceilings/commercial/north-america/installation-and-maintenance/castworks-metaphors-installation.pdf) for that product in effect at the time of installation and best industry practice. Prior to installation, the ceiling product must be kept clean and dry, in an environment that is between 32°F (0°C) and 120°F (49°C) and not subject to Abnormal Conditions. Abnormal conditions include exposure to chemical fumes, vibrations, moisture from conditions such as building leaks or condensation, excessive humidity, or excessive dirt or dust buildup.
	1. **WARRANTY**
29. Ceiling Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period
30. Warranty Period:
	1. Ceiling System: One (1) year from date of substantial completion
31. 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. **MAINTENANCE**
32. 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 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.

* 1. **MANUFACTURERS**
	2. Basis of Design CastWorks Metaphors Ceiling Panels
		1. Armstrong World Industries, Inc.
	3. Suspension Systems:
		1. Armstrong World Industries, Inc.

**2.2 CEILING UNITS**

* 1. CastWorks Metaphors Ceiling Panels
		1. Surface Texture: Smooth Texture
		2. Composition: Glass Fiber Reinforced Gypsum (GRG)
		3. Colors: White (WH), Silver Grey (SG), Gun Metal Grey (MY), Black (BL)
		4. Size: 24 in x 24 in
		5. Design:

Tidal: 6708D01C01 \_ \_, 6708D01C07 \_ \_, 6708D01C05 \_ \_

Tectonic: 6708D02C01 \_ \_, 6708D02C07 \_ \_, 6708D02C06 \_ \_

Pinnacle: 6708D03C01 \_ \_, 6708D03C07 \_ \_, 6708D03C02 \_ \_, 6708D03C08 \_ \_

Crests: 6708D04C01 \_ \_, 6708D04C05 \_ \_

Botanical: 6708D05C01\_ \_, 6708D06C01\_ \_, 6708D05C07\_ \_, 6708D06C07\_ \_

* + 1. Edge Profile: Square Tegular 9/16”
		2. Flame Spread: ASTM E 1264; Class A
		3. Light Reflectance (LR) White Panel: ASTM E 1477; 0.79
		4. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label
		5. Life Cycle Assessment: Third Party Certified Environmental Product Declaration (EPD)
		6. Basis of Design:CastWorks Metaphors ceiling panel (item 6708D0\_ \_ \_ \_ \_ \_) as manufactured by Armstrong World Industries, Inc.
	1. **METAL SUSPENSION SYSTEMS**
1. Components: Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.
	1. Structural Classification: ASTM C 635 Heavy Duty.
	2. Color: White (WH), Silver Grey (SG), Gun Metal Grey (MY), Black (BL)
	3. Basis of Design: Suprafine XL HD 9/16” Exposed Tee as manufactured by Armstrong World Industries, Inc.
		1. Suprafine XL 12' HD Main Beam (Item 7501)
		2. Suprafine XL 2' Cross Tee (item XL7520)
2. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge (item 7891)
3. Angle Moldings as manufactured by Armstrong World Industries, Inc.
	1. 12' Angle Molding (item 7800)
	2. 10' Angle Molding (item HD7801)
4. AXIOM Trim & Transitions as manufactured by Armstrong World Industries, Inc. [www.armstrongceilings.com/axiom](http://www.armstrongceilings.com/axiom)
5. Accessories as manufactured by Armstrong World Industries, Inc.

**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, unless expressly permitted by manufacturer's printed recommendations.

**3.2 PREPARATION**

1. Measure each ceiling area and establish layout of ceiling units to balance border widths at opposite edges of each ceiling. Coordinate panel layout with mechanical and electrical fixtures.
2. 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.
2. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.
3. Suspend main beam from overhead construction with hanger wires spaced 4 feet on center along the length of the main runner. Install hanger wires plumb and straight.
4. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
5. Install ceiling panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

**3.4 ADJUSTING AND CLEANING**

1. Replace damaged and broken panels.
2. Clean exposed surfaces of 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.