

**SECTION 09 50 00**  
**(09 54 00 Specialty Ceilings)**

**INTERSECTION DOWNLIGHT ACOUSTICAL CEILING INTEGRATION**

**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**

- A. Section Includes:
  - 1. Acoustical ceiling panels
  - 2. Exposed grid suspension system
  - 3. Suspension system hub and accessories
  - 4. Wire hangers, fasteners, main runners, cross tees, wall angle moldings and perimeter trim
  - 5. Light Fixture
- B. Related Sections:
  - 1. Section 09 53 00 (09500) – Acoustical Ceiling Suspension Assemblies
  - 2. Section 09 58 00 (09500) – Integrated Ceiling Assemblies
  - 3. Division 23 – HVAC Air Distribution Mechanical Work Division
  - 4. Division 26 – Electrical Work
- 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 which have not been approved by Addenda, the specified products shall be provided 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); 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 C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
  - 7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
  - 8. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
  - 9. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems
  - 10. ASTM E 1264 Classification for Acoustical Ceiling Products
  - 11. ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers
  - 12. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
  - 13. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

14. ASTM E 580 Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions
- B. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
- C. AC156 Acceptance Criteria for Seismic Certification by Shake-Table Testing of Nonstructural Components
- D. ICC ESR 1308 International Code Council Evaluation Report Independent Evaluation of Armstrong Suspension Components for Seismic Installations
- E. International Building Code

#### **1.4 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 ceilings. Show locations of items which 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. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.
- E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

#### **1.5 QUALITY ASSURANCE**

- A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.
- B. Fire Performance Characteristics: Identify acoustical 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 ASTM E 1264 for Class A products.
    - a. Flame Spread: 25 or less
    - b. Smoke Developed: 50 or less
    - c. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. 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.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

#### **1.7 PROJECT CONDITIONS**

- A. Space Enclosure:

All ceiling products and suspension systems must be installed and maintained in accordance with Armstrong written installation instructions 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.

#### **1.8 WARRANTY**

- A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:
  - 1. Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.
  - 2. Grid System: Rusting and manufacturer's defects
  - 3. Acoustical Panels with BioBlock Plus or designated as inherently resistive to the growth of micro-organisms installed with Armstrong suspension systems: Visible sag and will resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
- B. 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.

## 1.8 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 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

### 2.1 MANUFACTURERS

- A. Ceiling Panels:
  - 1. Armstrong World Industries, Inc.
- B. Suspension Systems:
  - 1. Armstrong World Industries, Inc.
- C. 4" Downlight Suspension Kit
  - 1. Armstrong World Industries, Inc.
- D. Lighting Fixture
  - 1. USAI Lighting

### 2.2 ACOUSTICAL CEILING UNITS

- A. **Acoustical Panels Type ACT (ARMSTRONG CALLA PANEL SELECTION)**
  - 1. Surface Texture: Smooth
  - 2. Composition: Mineral Fiber
  - 3. Color: White
  - 4. Size: 24IN x 24IN
  - 5. Edge Profile: Square Tegular 9/16IN for interface.
  - 6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton 0.85.
  - 7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton 35.
  - 8. Sabin: N/A
  - 9. Articulation Class (AC): ASTM E 1111; 170
  - 10. Flame Spread: ASTM E 1264; Class A (HPVA)
  - 11. Light Reflectance White Panel: ASTM E 1477; 0.86
  - 12. Dimensional Stability: HumiGuard Plus
  - 13. Recycle Content: Post-Consumer - 3% Pre-Consumer Waste - 73%
  - 14. Acceptable Product: **Calla Item number 2824**, as manufactured by Armstrong World Industries

## B. Acoustical Panels Type ACT (CALLA NOTCHED PANEL SELECTION)

1. Surface Texture: Smooth
2. Composition: Mineral Fiber
3. Color: White
4. Size: 24IN x 24IN
5. Edge Profile: Notched Square Tegular 9/16IN for interface.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton 0.85.
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton 35.
8. Sabin: N/A
9. Articulation Class (AC): ASTM E 1111; 170
10. Flame Spread: ASTM E 1264; Class A (HPVA)
11. Light Reflectance White Panel: ASTM E 1477; 0.86
12. Dimensional Stability: HumiGuard Plus
13. Recycle Content: Post-Consumer - 3% Pre-Consumer Waste - 73%
14. Factory Finished notched ceiling tile for seamless integration with the intersection downlighting.
15. Acceptable Product: **Calla Item number 2818**, as manufactured by Armstrong World Industries

## 2.3 SUSPENSION SYSTEM

### A. Acoustical Suspension System:

#### I. **Armstrong Suprafine Selection**

1. Composition: Hot-dipped Galvanized Steel
2. Color: White
3. Profile Height: 1-11/16in
4. Profile: PeakForm with SuperLock Main runner clip and XL<sup>2</sup> Stake-on end detail on Cross-tee
5. Flange 9/16"
6. Acceptable Product: Suprafine XL 9/16" Exposed Tee System as manufactured by Armstrong World Industries.

#### II. **Armstrong Interlude Selection**

1. Composition: Hot-dipped Galvanized Steel
2. Color: White
3. Profile Height: 1-11/16IN
4. Profile: Square bulb with XL<sup>2</sup> Stake-on clips on Main runner and Cross-tee
5. Flange: 9/16" Interlude dimensional design
6. Acceptable Product: Interlude XL 9/16" Dimensional Tee System as manufactured by Armstrong World Industries.

#### III. **Armstrong Silhouette 1/4" Selection**

1. Composition: Hot-dipped Galvanized Steel
2. Color: White
3. Profile Height: 1-3/4IN
4. Edge Profile: for interface with Silhouette XL 9/16" Bolt Slot - 1/4" Reveal.
5. Flame Spread: ASTM E 1264;
6. Acceptable Product: Silhouette XL 9/16" Bolt Slot - 1/4" Reveal, as manufactured by Armstrong World Industries.

#### IV. **Armstrong Silhouette 1/8" Selection**

1. Composition: Hot-dipped Galvanized Steel
2. Color: White
3. Profile Height: 1-3/4in
4. Edge Profile: for interface with Silhouette XL 9/16" Bolt Slot - 1/8" Reveal.
5. Flame Spread: ASTM E 1264;
6. Acceptable Product: Silhouette XL 9/16" Bolt Slot - 1/8" Reveal, 76198 as manufactured by Armstrong World Industries.

## 2.4 4" DOWNLIGHT SUSPENSION KIT

### I. Armstrong Suprafine Downlight Suspension Kit Selection

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 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.

- a. Structural Classification: ASTM C 635 Heavy Duty
- b. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
- c. Acceptable Product: **Suprafine XL 4" DOWNLIGHTING KIT, ITEM 75D4SK** as manufactured by Armstrong World Industries, Inc.
- d. Order appropriate Downlight Cross Tee for panel size  
XL7522DL – 24" Module Downlight Cross Tee  
XL7528DL – 30" Module Downlight Cross Tee  
XL7546DL – 48" Module Downlight Cross Tee

### II. Armstrong Interlude Downlight Suspension Kit Selection

Components: Cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Cross tees are double-web steel construction with exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Cross tees shall have rotary stitching. Cross Tee Connection Clip and High Profile Yoke fabricated from commercial quality galvanized steel. Downlight Suspension Frame fabricated from ADC12 Aluminum.

- a. Structural Classification: ASTM C 635 Heavy Duty
- b. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
- c. Acceptable Product: **INTERLUDE XL 4" DOWNLIGHTING KIT, ITEM 61D4SK** as manufactured by Armstrong World Industries
- d. Order appropriate Downlight Cross Tee for panel size  
XL7522DL – 24" Module Downlight Cross Tee  
XL7528DL – 30" Module Downlight Cross Tee  
XL7546DL – 48" Module Downlight Cross Tee

### III. Armstrong Silhouette 1/4" Downlight Suspension Kit Selection

Components: Cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Cross tees are double-web steel construction with exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Cross tees shall have rotary stitching. Cross Tee Connection Clip and High Profile Yoke fabricated from commercial quality galvanized steel. Downlight Suspension Frame fabricated from ADC12 Aluminum.

- a. Structural Classification: ASTM C 635 Heavy Duty
- b. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
- c. Acceptable Product: **SILHOUETTE 1/4 XL 4" DOWNLIGHTING KIT, ITEM 76D4SK** as manufactured by Armstrong World Industries

### IV. Armstrong Silhouette 1/8" Downlight Suspension Kit Selection

Components: Cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Cross tees are double-web steel construction with exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Cross tees shall have rotary stitching. Cross Tee Connection Clip and High Profile Yoke fabricated from commercial quality galvanized steel. Downlight Suspension Frame fabricated from ADC12 Aluminum.

- a. Structural Classification: ASTM C 635 Heavy Duty

- b. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
- c. Acceptable Product: SILHOUETTE 1/8 XL 4" DOWNLIGHTING KIT, **ITEM 768D4SK** as manufactured by Armstrong World Industries
- A. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- B. Wire for Hangers and Ties ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least times three design load, but not less than 12 gauge.
- C. Accessories: Low-Profile Yoke, Item FZD4YKLP, as manufactured by Armstrong World Industries, Inc.

## 2.5 LIGHTING FIXTURES

- A. A. Product/Manufacturer: USAI lighting fixture for use with 4" Intersection Downlighting Kit by Armstrong World Industries
  - B. Product Name: **BeveLED Connect Series**
  - C. Size: 4" square
  - D. Ceiling Grid Compatibility: Armstrong World Industries
  - E. Color: Finished Trim in white
- Contact USAI directly for customer service. (845) 565-8500 or visit [www.usailighting.com](http://www.usailighting.com) to find out more and to get connected with a local lighting rep or agency**

## 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

- A. 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.
- B. Follow the architectural drawings along with the manufacturer's installation instructions when installing the Armstrong ceiling panels and suspension system.
  - 1. Acoustical ceiling panels and suspension system components are purchased and installed by an acoustical or general contractor.
- C. Follow the engineering drawings along with USAI Lighting manufacturer's installation instructions when installing the BeveLED Connect
  - 1. BeveLED Connect is purchased and installed by electrical contractors.

### 3.4 ADJUSTING AND CLEANING

- A. Replace damaged and broken panels.
- B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.
  - 1. Ceiling Touch-Up Paint, (Item #5760, 8oz. bottles) (Item #5761, quart size cans), "global white" latex paint should be used to hide minor scratches and nicks in the surface and to cover field regularized edges that are exposed to view.
- C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

**END OF SECTION**