

# Shiprock First Responders Substation Facility

Highway 491, Shiprock, NM 87420  
Dyron Murphy Architects Project No. 2023.16



## ADDENDUM No. 3

March 15, 2024

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This addendum forms part of the Contract Documents and modifies the Bid Documents dated, January 28, 2019, as noted below. All Bidders must acknowledge receipt of this Addendum. Failure to do so may subject the Bidder to disqualification.

### BIDDERS QUESTIONS AND ANSWERS:

*(Please note that some questions may be paraphrased or edited to ensure clarity of responses to inquiries received)*

### ADDITIONS/MODIFICATIONS TO THE BID DOCUMENTS AS FOLLOWS:

#### CONTRACT DOCUMENTS

1. No changes.

#### SPECIFICATIONS:

1. Per Part 3.0 –of the “Instructions To Bidders”, the following Request for Substitution is acceptable, as long as it meets or exceeds the criteria spelled out in the project specifications:
  - a. Section 07 2500 – “Weather Barriers” – Part 2 Products, Subpart 2.04 (A), (5), Manufacturers – prior approval for W.R. Meadows – Air Shield LMP Vapor Barriers.
  - b. Section 10 2113 – “Solid Phenolic Toilet Compartments” – Part 2 Products, Subpart 2.01 (A), Manufacturers – include Scranton Aria Toilet Partitions.
2. Clarification on Specification Section 10 2800 – “Toilet, Bath and Laundry Accessories” - Part 2 Products, Subpart 2.01 (B), Manufacturers –Saniflow Corporation - Machflow model hand dryers – previous prior approval under Addendum No. 2 – Hand dryers are not be part of the bath accessories. Remove this product from further consideration.
3. Modify Specification Section 07 5400 – “Thermoplastic Membrane Roofing”, Part 2 Products, Subpart 2.06 A(3) – Thermal Resistance: R-Value to be achieved is minimum of 30. Therefore, the board material specified at 1.5 inches thick shall require 4 layers, or required number of layers, depending on thickness, to meet the stated R-Value.
4. Add the following Specification 07 7100 – “Roof Specialties”, 2pp.
5. Add the following Specification 07 7200 – “Roof Accessories”, 3pp.
6. Add the following Specification 07 9005 – “Joint Sealers”, 5pp.
7. Add the following Specification 08 6223 – “Tubular Skylights”, 4pp.

- Add the following Specification 09 5100 – “*Acoustical Ceilings*”, 3pp.

**DRAWINGS:**  
**STRUCTURAL**

- SHEET S002 – GENERAL STRUCTURAL NOTES: For clarification related to information on stair fabrication/detailing for stringers/risers/treads – note the following per sheet S002:

**DEFERRED SUBMITTALS (DELEGATED DESIGN):**

THE DEFERRED SUBMITTALS LISTED BELOW ARE THOSE PORTIONS OF THE DESIGN THAT ARE NOT COMPLETED AT THE TIME OF APPLICATION AND ARE TO BE SUBMITTED TO THE BUILDING OFFICIAL AND APPROVED PRIOR TO THE INSTALLATION OF THOSE ITEMS. THE MANUFACTURER, CONSULTANT, OR CONTRACTOR, AS APPROPRIATE, SHALL PROVIDE SUBMITTALS TO THE ENGINEER OF RECORD FOR REVIEW FOR THE FOLLOWING ITEMS:

- SPECIAL STEEL JOISTS DESIGNATED WITH SP
- METAL STAIRS AND HANDRAILS
- GLAZING AND STOREFRONT SYSTEMS
- SEISMIC BRACING OF ALL MEP EQUIPMENT AND SYSTEMS

**ARCHITECTURAL**

- SHEET A102 – SECOND FLOOR PLAN - Clarification: Keyed Note 10.2226 E1 shall be modified to read as “10 2240 E1 – Vertically Folding Operable Walls”. Delete any and all references to specification section 10 2226 and utilize 10 2240 henceforth.
- SHEET A601 – DOOR SCHEDULE – Modify door schedule designation for STC Rating from “45” to “34”. Resultant door composition shall have a minimum 1 inch thick assembly. Additionally, change designation of SG-1 to BRG. Door numbers 201 and C01A shall have this BRG designation, with glazing having an opaque film as an option during the submittal phase.
- SHEET A602 – DOOR & WINDOW TYPES – Modify detail B5 as follows: delete Door Opening Type #8 entirely.

**INTERIOR DESIGN**

- SHEET ID602 – MATERIAL SCHEDULE – Modify the material schedule as follows:

ID_INTERIOR MATERIAL SCHEDULE							
FLOORING							
KEY	DESCRIPTION	MFR	MODEL	SIZE	COLOR	LOCATIONS	COMMENTS
CPT-1	INSTALL - CARPET TILE	SHAW	CUT & COMPOSE - STYLE: CONSTRUCT 5T104 - COLOR: TYPESET 03505	24 IN. X 24 IN.	TYPESET 03505	SEE FINISH PLAN. REPLACE WITH PRIOR SPECIFIED CARPET ROLL.	MULTI-LEVEL PATTERN LOOP
CPT-2	INSTALL - CARPET TILE	SHAW	CUT & COMPOSE - STYLE: CONSTRUCT 5T104 - COLOR: FACTOR 03760	24 IN. X 24 IN.	FACTOR 03760	SEE FINISH PLAN. REPLACE WITH PRIOR SPECIFIED CARPET ROLL.	MULTI-LEVEL PATTERN LOOP

Previously scheduled material has been discontinued. This modification reflects closely original design intent.

**By:**

Dyron Murphy, Principal Architect  
Dyron Murphy Architects, P.C

Attachments: Specification 07 7100 – “Roof Specialties”, 2pp.  
Specification 07 7200 – “Roof Accessories”, 3pp.  
Specification 07 9005 – “Joint Sealers”, 5pp.  
Specification 08 6223 – “Tubular Skylights”, 4pp.  
Specification 09 5100 – “Acoustical Ceilings”, 3pp.

**END OF ADDENDUM No. 3**

**SECTION 07 7100  
ROOF SPECIALTIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Manufactured roof specialties, including copings and fascias.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 6200 – Sheet Metal Flashing and Trim.
- B. Section 07 9005 - Joint Sealers.

**1.03 REFERENCE STANDARDS**

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- B. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2017.
- C. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).
- D. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- E. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
- F. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- G. NRCA (RM) - The NRCA Roofing Manual; 2023.
- H. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.
- D. Samples: Submit two appropriately sized samples of coping.
- E. Manufacturer's Installation Instructions: Indicate special procedures, fasteners, supporting members, and perimeter conditions requiring special attention.

**PART 2 PRODUCTS**

**2.01 COMPONENTS**

- A. Roof Edge Flashings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.
  - 1. Configuration: Fascia, cant, and edge securement for roof membrane.
  - 2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test methods RE-1 and RE-2 to positive and negative design wind pressure as defined by applicable local building code.
  - 3. Exposed Face Height: As indicated on drawings.
  - 4. Material: Formed steel sheet, galvanized, 22 gage, 0,03 inch thick, minimum.
  - 5. Color: To be selected by Architect from manufacturer's standard range.
- B. Copings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.

1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness and finish as cap; concealed stainless steel fasteners.
2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
3. Material: Formed steel sheet, galvanized, 24 gage, 0.024 inch thick, minimum.
4. Color: To be selected by Architect from manufacturer standard colors.

## **2.02 FINISHES**

- A. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as indicated.

## **2.03 ACCESSORIES**

- A. Sealant for Joints in Linear Components: As recommended by component manufacturer.
- B. Adhesive for Anchoring to Roof Membrane: Compatible with roof membrane and approved by roof membrane manufacturer.
- C. Roof Cement: ASTM D4586/D4586M, Type II.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.
  1. Refer to Section 07 7200 for information on roofing related accessories.

### **3.02 INSTALLATION**

- A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Seal joints within components when required by component manufacturer.
- C. Anchor components securely.
- D. Coordinate installation of components of this section with installation of roofing membrane and base flashings.
- E. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.
- F. Coordinate installation of flashing flanges into reglets.

**END OF SECTION**

**SECTION 07 7200  
ROOF ACCESSORIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Roof curbs.
- B. Equipment rails.
- C. Roof penetrations mounting curbs.
- D. Roof hatches.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 6200 - Sheet Metal Flashing and Trim: Roof accessory items fabricated from sheet metal.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used.
  - 1. Preparation instructions and recommendations.
  - 2. Installation methods.
  - 3. Maintenance requirements.
- C. Warranty Documentation:
  - 1. Submit manufacturer warranty.
  - 2. Ensure that forms have been completed in Owner's name and registered with manufacturer.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.

**1.05 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

**PART 2 PRODUCTS**

**2.01 ROOF CURBS**

- A. Roof Curbs Manufacturers:
  - 1. AES Industries Inc.: [www.aescurb.com](http://www.aescurb.com).
  - 2. The Pate Company: [www.patecurbs.com](http://www.patecurbs.com).
  - 3. Roof Products & Systems (RPS): [www.rpscurbs.com](http://www.rpscurbs.com).
- B. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.
  - 1. Roof Curb Mounting Substrate: Curb substrate consists of standing seam metal roof panel system.
  - 2. Sheet Metal Material:
    - a. Aluminum: 0.080 inch (2.03 mm) minimum thickness, with 3003 alloy, and H14 temper.
  - 3. Fabricate curb bottom and mounting flanges for installation directly on metal roof panel system to match slope and configuration of system.
    - a. Extend side flange to next adjacent roof panel seam and comply with seam configurations and seal connection, providing at least 6 inch (152 mm) clearance between curb and metal roof panel flange allowing water to properly flow past curb.

- b. Where side of curb aligns with metal roof panel flange, attach fasteners on upper slope of flange to curb connection allowing water to flow past below fasteners, and seal connection.
  - c. Maintain at least 12 inch (305 mm) clearance from curb, and lap upper curb flange on underside of down sloping metal roof panel, and seal connection.
  - d. Lap lower curb flange overtop of down sloping metal roof panel and seal connection.
- 4. Provide layouts and configurations indicated on drawings.
- C. Curbs Adjacent to Roof Openings: Provide curb on each side of opening, with top of curb horizontal for equipment mounting.
  - 1. Provide preservative treated wood nailers along top of curb.
  - 2. Insulate inside curbs with 1-1/2 inch (38 mm) thick fiberglass insulation.
  - 3. Height Above Finished Roof Surface: 8 inches (203 mm), minimum.
- D. Equipment Rail Curbs: Straight curbs on each side of equipment, with top of curbs horizontal and level with each other for equipment mounting.
- E. Pipe, Duct, or Conduit Mounting Curbs: Vertical posts, minimum 8 inches (400 mm) square unless otherwise indicated.
  - 1. Provide sliding channel welded along top edge with adjustable height steel bracket, fabricated to fit item supported.

## 2.02 ROOF HATCHES

- A. Roof Hatch Manufacturers:
  - 1. Acudor Products Inc; Galvanized Steel Roof Hatch: [www.acudor.com/#sle](http://www.acudor.com/#sle).
  - 2. Babcock-Davis; ThermalMAX: [www.babcockdavis.com/#sle](http://www.babcockdavis.com/#sle).
  - 3. Bilco Company; Type TB (various types and special size): [www.bilco.com/#sle](http://www.bilco.com/#sle).
  - 4. Dur-Red Products: [www.dur-red.com](http://www.dur-red.com).
  - 5. Milcor, Inc: [www.milcorinc.com](http://www.milcorinc.com).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
  - 1. Insulation: Manufacturer's standard; 1 inch (25 mm) rigid glass fiber, located on outside face of curb.
  - 2. Curb Height: 12 inches (305 mm) from finished surface of roof, minimum.
- C. Metal Covers: Flush, insulated, hollow metal construction.
  - 1. Capable of supporting 40 psf (1.92 kPa) live load.
  - 2. Insulation: Manufacturer's standard 1 inch (25 mm) rigid glass fiber.
  - 3. Gasket: Neoprene, continuous around cover perimeter.
- D. Safety Railing System: Roof hatch safety rail system mounted directly to curb without penetration of roofing system.
  - 1. Railing Size: As indicated on drawings.
  - 2. Railing: Comply with 29 CFR 1910.23 for ladder safety, with a safety factor of two.
  - 3. Posts and Rails: Galvanized steel tubing.
  - 4. Gate: Same material as railing; automatic closing with latch.
  - 5. Finish: Manufacturer's standard, factory applied finish.
- E. Extendable Ladder Safety Post: Manufacturer's standard safety post mounted to roof ladder.
  - 1. Spring counter weight for easy lift with one hand.
  - 2. Provide latch to maintain the post at variable heights and to easily release for retracting the pole.
  - 3. Square post with non slip grip and a ring at top for a harness attachment.
  - 4. Color to be Safety Yellow.
- F. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.

1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf (475 kPa) load.
2. Hinges: Heavy duty pintle type.
3. Hold open arm with vinyl-coated handle for manual release.
4. Latch: Upon closing, engage latch automatically and reset manual release.
5. Manual Release: Pull handle on interior.
6. Locking: Padlock hasp on interior.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

#### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

#### **3.04 CLEANING**

- A. Clean installed work to like-new condition.

#### **3.05 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**



**SECTION 07 9005  
JOINT SEALERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Sealants and joint backing.
- B. Precompressed foam sealers.
- C. Hollow gaskets.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 2400 - Exterior Insulation and Finish System.
- B. Section 07 2500 - Weather Barriers: Sealants required in conjunction with air barriers and water retarders:
- C. Section 07 8400 - Firestopping: Firestopping sealants.
- D. Section 09 2116 - Gypsum Board Assemblies: Acoustic sealant.
- E. Section 09 3000 - Tiling: Sealant used as tile grout.

**1.03 REFERENCE STANDARDS**

- A. ASTM C834 - Standard Specification for Latex Sealants; 2017.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- E. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.
- F. ASTM D1667 - Standard Specification for Flexible Cellular Materials—Poly (Vinyl Chloride) Foam (Closed-Cell); 2022.
- G. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).
- H. ASTM D2628 - Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements; 1991 (Reapproved 2016).
- I. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating sealant chemical characteristics.
- C. Samples: Submit two samples, 4x4 inches in size illustrating sealant colors for selection.

**1.05 QUALITY ASSURANCE**

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

**1.06 MOCK-UP**

- A. Provide mock-up of sealant joints in conjunction with window under provisions of Section 01 4000.
- B. Construct mock-up with specified sealant types and with other components noted.
- C. Locate where directed.
- D. Mock-up may remain as part of the Work.

## 1.07 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

## 1.08 COORDINATION

- A. Coordinate the work with all sections referencing this section.

## 1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Silicone Sealants:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 3. BASF Construction Chemicals-Building Systems: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
- B. Polyurethane Sealants:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 3. BASF Construction Chemicals-Building Systems: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
- C. Acrylic Sealants (ASTM C920):
  - 1. Pecora Corporation: [www.pecora.com](http://www.pecora.com)
  - 2. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 3. Hilti, Inc.: [www.us.hilti.com](http://www.us.hilti.com).
- D. Butyl Sealants:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
- E. Acrylic Emulsion Latex Sealants:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 3. BASF Construction Chemicals-Building Systems: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
- F. Preformed Compressible Foam Sealers:
  - 1. EMSEAL Joint Systems, Ltd: [www.emseal.com](http://www.emseal.com).
  - 2. InProCorp Jointmaster; [www.inprocorp.com/jointmaster](http://www.inprocorp.com/jointmaster).
  - 3. Sandell Manufacturing Company, Inc: [www.sandellmfg.com](http://www.sandellmfg.com).
  - 4. Dayton Superior Corporation: [www.daytonsuperior.com](http://www.daytonsuperior.com).
  - 5. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).

### 2.02 SEALANTS

- A. Sealants and Primers - General: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.
- B. General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25 minimum; Uses M, G, and A; single component.
  - 1. Color: Standard colors matching finished surfaces.
  - 2. Applications: Use for:
    - a. Control, expansion, and soft joints in masonry.
    - b. Joints between concrete and other materials.
    - c. Joints between metal frames and other materials.
    - d. Other exterior joints for which no other sealant is indicated.

- C. Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
  - 1. Applications: Use for:
    - a. Concealed sealant bead in sheet metal work.
    - b. Concealed sealant bead in siding overlaps.
- D. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
  - 1. Color: Standard colors matching finished surfaces.
  - 2. Applications: Use for:
    - a. Interior wall and ceiling control joints.
    - b. Joints between door and window frames and wall surfaces.
    - c. Other interior joints for which no other type of sealant is indicated.
- E. Bathtub/Tile Sealant: White silicone; ASTM C920, Uses I, M and A; single component, mildew resistant.
  - 1. Applications: Use for:
    - a. Joints between plumbing fixtures and floor and wall surfaces.
    - b. Joints between kitchen and bath countertops and wall surfaces.
- F. Acoustical Sealant for Concealed Locations:
  - 1. Composition: Acrylic latex emulsion sealant, mold-resistant.
  - 2. Applications: Use for concealed locations only:
    - a. Sealant bead between top stud runner and structure and between bottom stud track and floor.
- G. Acoustical Spray:
  - 1. Composition: Acrylic, mold-resistant.
  - 2. Applications: Used at top of wall assemblies between top stud runner and structure.
  - 3. Color: White, paintable. Color to match adjacent surface.
- H. Concrete Floor Joint Filler: Self-leveling, pourable, semi-rigid sealant intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
  - 1. Composition: Polyurea or epoxy, single or multi-part, 100 percent solids by weight.
  - 2. Hardness: 75 to 80 after 7 days, when tested in accordance with ASTM D2240 Shore A.
  - 3. Color: To be selected by Architect from manufacturer's standard colors.
  - 4. Joint Width: 1/8 to 1/4 inch.
  - 5. Joint Depth: Provide product suitable for joints from 1/8 inch to 2 inches in depth including space for backer rod.
- I. Interior Floor Joint Sealant: Polyurethane, self-leveling; ASTM C920, Grade P, Class 25, Uses T, M and A; single component.
  - 1. Color: Standard colors matching finished surfaces.
  - 2. Applications: Use for:
    - a. Expansion joints in floors.
- J. Concrete Paving Joint Sealant: Polyurethane, self-leveling; ASTM C920, Class 25, Uses T, I, M and A; single component.
  - 1. Applications: Use for:
    - a. Joints in sidewalks and vehicular paving.
- K. Butyl Sealant: ASTM C1311; single component, solvent release, non-skinning, non-sagging.
  - 1. Color: Standard colors matching finished surfaces.
- L. Silicone Sealant: ASTM C920, Grade NS, Class 25 minimum; Uses NT, A, G, M, O; single component, neutral curing, non-sagging, non-staining, fungus resistant, non-bleeding.
  - 1. Color: Standard colors matching finished surfaces.
- M. Building Expansion Foam Seal: Water tight, insulated seal, UV stable. Open cell foam is self-expanding allowing system to maintain watertight seal undergoing rapid joint movement. Pre-compressed with peel and stick adhesive sides.

1. Size: Field verify opening dimensions.
  2. Color: To be selected by Architect from manufacturer standard colors.
  3. Movement: Allows 100%.
  4. Applications: Vertical and horizontal installation.
- N. Building Interior Floor to Floor Expansion Foam Seal and Cover:
1. Closed cell, durable, ethylene vinyl acetate (EVA) foam designed to provide a 100% watertight joint.
  2. Chemical, weather and UV resistant.
  3. Allows for 25% tension, 50% compression and 100% shear movement.
  4. Expansion Joint Cover:
    - a. Aluminum, anodized, pre-drilled counter-sunk holes with anti-slip surface serrations.
    - b. Mechanically fastened to a single side of the expansion joint opening.
    - c. Size: Field verify opening dimensions.
- O. Roof Expansion Joint and Expansion Joint Cover:
1. Designed to manage the movement of commercial building systems including thermal, settlement, new and existing junctions or direction and seismic movement. Compatible with all roof membranes.
  2. Flexible, weather-proof exterior covers for expansion joint openings.
  3. Flexible rubber membrane, supported by a closed cell foam to form flexible bellows, with two metal flanges, adhesively and mechanically combined to the bellows.
  4. Size: Field verify opening dimensions.

## **2.03 ACCESSORIES**

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
- C. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

### **3.02 PREPARATION**

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Protect elements surrounding the work of this section from damage or disfigurement.
- E. Exposed Concrete Floor Joints: Test joint filler in inconspicuous area of floor slab. Verify specified product does not stain or discolor slab.

### **3.03 INSTALLATION**

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- E. Install bond breaker where joint backing is not used.

- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- H. Tool joints concave.
- I. Concrete Floor Joint Filler: Install concrete floor joint filler per manufacturer's written instructions. After floor joint filler is fully cured, shave joint filler flush with top of concrete slab.

**3.04 CLEANING**

- A. Clean adjacent soiled surfaces.

**3.05 PROTECTION**

- A. Protect sealants until cured.

**END OF SECTION**

**SECTION 08 6223**  
**TUBULAR SKYLIGHTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Tubular skylights, consisting of skylight dome, reflective tube, and diffuser assembly.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 5400 - Thermoplastic Polyolefin Sheet Roofing.

**1.03 REFERENCE STANDARDS**

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022.
- B. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2010, with 2013 Supplements and Errata.
- C. ASTM A463/A463M - Standard Specification for Steel Sheet, Aluminum-Coated, by the Hot-Dip Process; 2022.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- E. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- F. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2022.
- G. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics; 2020.
- H. ASTM D2843 - Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics; 2022.
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- J. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2020a.
- K. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- L. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
- M. UL (DIR) - Online Certifications Directory; current listings at [database.ul.com](http://database.ul.com).
- N. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors; Current Edition, Including All Revisions.
- O. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings; Current Edition, Including All Revisions.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Indicate configurations, dimensions, locations, fastening methods, and installation details.
- D. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:

1. Evidence of AAMA Certification.
  2. Evidence of WDMA Certification.
  3. Evidence of CSA Certification.
  4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.
- E. Test Reports: Prior to submitting shop drawings or starting fabrication, submit test report(s) by independent testing agency showing compliance with performance requirements in excess of those prescribed by specified grade.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than ten years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### **1.07 FIELD CONDITIONS**

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### **1.08 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Skylights: Manufacturer's standard warranty for 10 years.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Solatube International, Inc: [www.solatube.com](http://www.solatube.com).
- B. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 TUBULAR SKYLIGHTS**

- A. Tubular Skylights: Transparent roof-mounted skylight dome and curb, reflective tube, and ceiling level diffuser assembly, transferring sunlight to interior spaces.
  1. Fabrication and assembly of components is by single manufacturer.
  2. Non-Metal Parts: Flammability less than the following.
    - a. Roof-Top Components: Class B when tested in accordance with ASTM E108 or UL 790.
    - b. Self-Ignition Temperature: Greater than 650 degrees F, when tested in accordance with ASTM D1929.
    - c. Smoke Developed Index: Maximum of 450, when tested in accordance with ASTM E84; or maximum rating of 75, when tested in accordance with ASTM D2843.
    - d. Combustibility - Light Transmitting Parts: Minimum 2.5 inches/min (ICC Class CC-2), when tested in accordance with ASTM D635.
  3. Thermal Movement: Fabricate to allow for thermal movement resulting from temperature differential from minus 30 to 180 degrees F without damage to components, fasteners, or substrates.
- B. Roof Assemblies: Transparent, UV and impact resistant dome with flashing base supporting dome and top of tube.
  1. Glazing: Acrylic plastic, 1/8 inch minimum thickness.
  2. Low-Angled Sun Reflector: Concentric, light refracting etched lines, minimum 2 inches high, to improve light input when sun is low on horizon.

3. Base: One piece, seamless, leak-proof flashing functioning as base support for dome and top of tube.
  4. Base Material: Sheet steel, galvanized, ASTM A653/A653M, 24 gauge, 0.0239 inch thick, minimum.
  5. Flashing Extensions: Provide manufacturer's standard adaptors or extensions for tile applications and slopes greater than 8:12.
  6. Dome Ring: Attached to top of base section; 0.090 inch nominal thickness injection molded high impact ABS; to prevent thermal bridging between base flashing and tubing and channel condensed moisture out of tubing; weather seal of medium density pile weather stripping.
- C. Reflective Tube: ASTM B209/B209M aluminum sheet, thickness between 0.015 inch and 0.020 inch.
1. Interior Finish: Exposed interior surfaces of high reflectance specular finish; specular reflectance of 92, total reflectance 95 percent.
  2. Tube Diameter: 10 inches.
  3. Tube Configuration and Length: Angular run, approximately 8 feet (2.4 m) long.
- D. Diffuser Assemblies: Supporting light transmitting surface at bottom termination of tube, with compression seal to minimize condensation and bug or dirt infiltration.
1. Ceiling Ring: Edge trim for ceiling opening; injection molded high impact ABS.
  2. Diffuser Trim: Edge and attachment trim for diffuser lens; injection molded high impact ABS.
  3. Diffuser Shape at Solid Ceilings: Round, same diameter as tube.
  4. Diffuser Shape in Lay-In Ceiling Grid: Square, 24 by 24 inches, to fit grid; metal transition box.
  5. Diffuser Shape at No Ceiling: Round, same diameter as tube.
  6. Lens: Flush frosted lens.
  7. Lens Material: Acrylic plastic.
  8. Lens Thickness: 0.038 inch, minimum.
  9. Visible Light Transmission (VLT): 90 percent, minimum.
  10. Seal: Closed cell EPDM foam rubber.

### **2.03 PERFORMANCE REQUIREMENTS**

- A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific tubular skylight:
  1. Product Type: Tubular Daylighting Device, Closed Ceiling (TDDCC).
- B. Design Pressure (DP): In accordance with applicable codes.
- C. No permanent deflection in excess of 0.2 percent of span.
- D. Air Leakage: 0.30 cfm/sq ft maximum leakage for tubular skylight unit when tested at 1.57 psf pressure difference in accordance with ASTM E283/E283M.
- E. Water Resistance: No uncontrolled water leakage at 6.27 psf pressure differential with water rate of 5 gallons/h/sf, when tested in accordance with ASTM E331; design to ensure that water will not accumulate inside assembly.

### **2.04 ACCESSORIES**

- A. Fasteners: Same material as metals being fastened, non-magnetic steel, non-corrosive metal of type recommended by manufacturer, or injection molded nylon.
- B. Sealant: Elastomeric, silicone or polyurethane; compatible with materials being sealed.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.



### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's written instructions.
- B. Set roof assembly flashing in continuous bead of sealant.
- C. Seal joints exposed to weather in accordance with sealant manufacturer's written instructions.
- D. Conduct field test for water tightness; conduct water test in presence of Architect. Correct defective work and re-test until satisfactory.

### **3.04 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

**SECTION 09 5100**  
**ACOUSTICAL CEILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

**1.02 RELATED REQUIREMENTS**

- A. Division 23 - Mechanical.
- B. Section 26 5100 - Interior Lighting: Light fixtures in ceiling system.

**1.03 REFERENCE STANDARDS**

- A. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2010, with 2013 Supplements and Errata.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- C. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2017.
- D. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2017.
- E. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.
- F. 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.
- G. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.
- H. ITS (DIR) - Directory of Listed Products; current edition.
- I. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2019.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components and acoustical units.
- D. Samples: Submit two samples 6"x6" inch in size illustrating material and finish of acoustical units.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Manufacturer's Qualification Statement.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

## **1.06 QUALITY ASSURANCE**

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

## **1.07 FIELD CONDITIONS**

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

## **PART 2 PRODUCTS**

### **2.01 ACOUSTICAL UNITS**

- A. Acoustical Panels: with the following characteristics:
  - 1. Basis of Design: Armstrong Ultima Lay-In.
  - 2. Color: White.
  - 3. Size: 24-inch x 48-inch.
  - 4. Thickness: 3/4-inch.
  - 5. Edge: Beveled Tegular 9/16
  - 6. Surface Texture: Fine-textured, non-perforated and non-fissured.
  - 7. Noise Reduction Coefficient (NRC): 0.75.
  - 8. Ceiling Attenuation Class: 35, minimum.
  - 9. Sound Blocking: up to 40.
  - 10. Light Reflectance: 88%.
  - 11. Sag/humidity Resistance: HUMIGUARD Plus Standard.
  - 12. Flame Spread: ASTM E 1264; Class A (UL).

### **2.02 SUSPENSION SYSTEM(S)**

- A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
  - 1. Profile: Tee; 15/16 inch face width.
  - 2. Finish: Baked Enamel.
  - 3. Color: White.
  - 4. Refer to manufacturer for recommended suspension type for application.

### **2.03 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.
- D. Touch-up Paint: Type and color to match acoustical and grid units.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

### **3.02 PREPARATION**

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.

### **3.03 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Use longest practical lengths.
- E. 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.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.

#### **3.04 INSTALLATION - ACOUSTICAL UNITS**

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units:
  - 1. Cut to fit irregular grid and perimeter edge trim.
  - 2. Make field cut edges of same profile as factory edges.
  - 3. Double cut and field paint exposed reveal edges.

#### **3.05 TOLERANCES**

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

**END OF SECTION**