

## **SPECIAL SPECIFICATION**

### **SECTION 08630S**

#### **METAL-FRAMED SKYLIGHTS**

##### **PART 1 - GENERAL**

###### **1.01 SECTION INCLUDES**

- A. Steel framed skylight, including skylight glazing system, fasteners, anchors, reinforcement, and flashings.

###### **1.02 RELATED SECTIONS**

- A. Section 03300S – Cast In Place Concrete: Support curbs.
- B. Section 05120S - Structural Steel: Structural support framing for system.
- C. Section 05500S - Metal Fabrications: Fabricated steel attachment devices and framed opening.
- D. Section 06100S – Rough Carpentry: Wood blocking.
- E. Section 07260 - Vapor Retarders: Edge conditions at roof penetrations.
- F. Section 07600S – Flashing and Sheet Metal: Skylight counterflashing.
- G. Section 07270 – Firestop and Smokestop systems
- H. Section 07900S - Joint Sealants.
- I. Section 08800S – Glass and Glazing: Glass and glazing not integral with metal-framed skylights.
- J. Section 07533S- Single Ply Roofing System: Roofing system and base flashing at skylight curb.

###### **1.03 REFERENCES**

- A. AA - Designation System for Aluminum Finishes.
- B. AAMA 501.94 - Methods of Tests for Exterior Walls.
- C. OSHA Standard 29 CFR 1910.23.

- D. AAMA 603.8 - Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum.
- E. AAMA 605.2 - Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
- F. AAMA 611 - Standards for Anodized Architectural Aluminum.
- G. AAMA 1603.1 - Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections.
- H. ASTM A 36/A36M - Structural Steel.
- I. ASTM A 123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- J. ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- K. ASTM B 221 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
- L. ASTM C 794 - Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
- M. ASTM C 920 - Elastomeric Joint Sealants.
- N. ASTM D 412 - Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension.
- O. ASTM E 283 - Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- P. ASTM E 330 - Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- Q. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- R. FS TT-C-494 - Coating Compound, Bituminous, Solvent Type, Acid Resistant.

#### 1.04 DESIGN REQUIREMENTS

- A. System Design: Design and size components to withstand loads as required by applicable code.

- B. Deflection: Design and size components for maximum allowable deflection of any glazing support member of 1/180 of span.
- C. Movement: Design system to limit stress on elastomeric sealants to 20 percent of tested tensile adhesion and maximum compression or elongation to 25 percent of neutral dimension.
- D. Expansion/Contraction: Design system to accommodate thermal expansion and contraction over ambient temperature range of 100 degrees F, dynamic loading and release of loads, creep of concrete structural members, and deflection of structural support framing without damage to skylight system components or loss of weathertightness.
- E. Thermal Resistance of Assembly: See Section 08800S – Glass and Glazing. Provide a 18-22% visible light transmittance (VT).
- F. Limit air infiltration through assembly to 0.06 cubic foot per minute per square foot for glazed area, measured at a reference differential pressure across assembly of 6.24 pounds per square foot in accordance with ASTM E 283.
- G. Water Leakage: None, when measured in accordance with ASTM E 331 at a static pressure of 6.24 pounds per square foot.
- H. Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.

#### 1.05 SUBMITTALS

- A. Environmental Objectives Documentation: signed by the manufacturers/fabricators stating level of compliance for the requirements and objectives of Section 01805S – Environmental Objectives.
- B. Shop Drawings: Indicate framed opening requirements and tolerances, spacing of all members, framing member profiles, anticipated deflection under load, affected related Work, expansion and contraction joint locations and details, and identify shop and field welds by AWS Welding Symbols, A2.0.
- C. Product Data: Submit manufacturer's specifications, standard details, and installation requirements.
- D. Samples: Submit two 12 inches by 12 inches in size illustrating appearance of prefinished aluminum and specified glazing system, including glazed edge and corner.

- E. Test Reports: Indicate substantiating engineering data, test results of previous testing of similar assemblies meeting performance criteria, and other supporting data.
- F. Manufacturer's Installation Instructions: Submit special procedures, safety precautions, and perimeter conditions requiring special attention.
- G. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project.
- H. Installer Qualifications: Company specializing in performing Work of this section as approved by skylight manufacturer.
- I. Design framed skylight system under direct supervision of a professional engineer experienced in design of Work of the type specified in this section and licensed where the Project is located.

#### 1.06 MOCK-UP

- A. Construct mock-up that shows typical skylight construction including all materials and conditions. Size mock-up minimum 10 feet by 10 feet.
- B. Locate where directed or where approved.
- C. Make such modifications as necessary to achieve a satisfactory mock-up or remove and construct additional mock-up(s).
- D. Approved mock-up shall serve as the standard for the same work on the building. Mock-up may not remain as part of the Work.

#### 1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Provide wrapping to protect pre-finished aluminum surfaces. Do not use adhesive papers or spray coatings that bond when exposed to sunlight or weather.

#### 1.08 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### 1.09 COORDINATION

- A. Coordinate the Work with the installation of roofing system and structural curb.

#### 1.10 WARRANTY

- A. Provide five-year manufacturer warranty for metal-framed skylights.

## PART 2 - PRODUCTS

### 2.01 METAL-FRAMED SKYLIGHTS

- A. Manufacturers:
  - 1. Fisher Skylights Inc.
  - 2. IBP Grid Systems, Inc.
  - 3. Naturalite Skylight Systems.
  - 4. Skywall Translucent Systems.
  - 5. Wasco Products.
- B. Provide materials in accordance with Municipality of Albuquerque Public Work's standards.
- C. Product Description: Skylight Frame: Extruded steel structural members with integral condensation collection and guttering system thermally separated from exterior metal components.
  - 1. Glazing System: Mechanically retained glazing system.
  - 2. Glazing: Insulating glass.

### 2.02 COMPONENTS

- A. Steel Structural Members: Hot rolled formed sections, galvanized to ASTM A123, Grade 55; 100% Recycled Steel.
- B. Glass: Conform with requirements specified in Section 08800.
- C. Perimeter Sealant: Specified in Section 07900S.

### 2.03 ACCESSORIES

- A. Glazing Accessories: As standard with manufacturer of skylight system conforming with requirements specified in Section 08800.
- B. Flashings: Same metal type, thickness, and finish as roof flashing metal, and secured with concealed fastening method.

- C. Touch-Up Primer for Galvanized Steel Surfaces: Zinc rich type.
- D. Protective Coating: Bituminous coating, FS TT-C-494, Type II.
- E. Fasteners: Non-corrosive type as recommended by skylight manufacturer.
- F. Anchorage Devices: Type recommended by manufacturer, concealed.

#### 2.04 FABRICATION

- A. Form skylight rafters as indicated on Drawings.
- B. Fit and secure joints and corners with screw and spline or internal reinforcement. Make joints rigid, with connections that are flush, hairline, and weatherproof.
- C. Fabricate components to allow for expansion and contraction with minimum clearance and shim spacing around perimeter of assembly.
- D. Maintain continuous air and vapor barrier throughout assembly, with the barrier plane aligned with inside pane of glazing continuing to a heel bead of glazing sealant.
- E. Drain water entering exterior joints, condensation occurring in glazing channels, and migrating moisture occurring within system, to exterior.
- F. Prepare components to receive concealed anchorage devices. Ensure that fasteners and anchorage devices will be concealed upon completion of installation.
- G. Adhere glazing frames to glass with structural sealant and cure under controlled conditions in shop. Field glazing of frames to glass is not acceptable.

#### 2.05 FACTORY FINISHING

- A. Frame Surface: Galvanized Prime painted, baked enamel finish, color as selected from Manufacturer's Standards.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Verify structural curb is ready to receive skylight system. Coordinate installation of roofing and other adjacent Work to ensure weathertight construction.

#### 3.02

## INSTALLATION

- A. Set skylight structure plumb, level, and true to line, without warp or rack of frames or glazing panels. Anchor securely in place in accordance with approved shop drawings.
- B. Maintain assembly dimensional tolerances, aligning with adjacent Work.
- C. Apply minimum one coat of bituminous coating to concealed aluminum and steel surfaces in contact with dissimilar metals.
- D. Install sill flashings.
- E. Pack fibrous insulation in shim spaces at perimeter of assembly to ensure continuity of thermal barrier.
- F. Install glazing in accordance with manufacturer's recommended procedures.

### 3.03 ERECTION TOLERANCES

- A. Maximum Variation from Plumb, Level, or Line: 1/8-inch per 10 feet, or 3/8-inch total in overall dimension.
- B. Alignment of Two Adjoining Members Abutting in Plane: Within 1/16-inch.

### 3.04 3.04 FIELD QUALITY CONTROL

- A. Perform field water test in compliance with AAMA 501.94 on each completed skylight.
- B. Perform one test on each skylight assembly after completion, with repeat tests if failures occur.
- C. Should such testing result in leakage, eliminate the causes of such leakage at no additional cost to the Owner.

### 3.05 CLEANING

- A. Remove protective material from prefinished aluminum surfaces.
- B. Wash down exposed surfaces; wipe surfaces clean.
- C. Remove excess sealant by methods recommended by skylight manufacturer.
- D. Touch up damaged finishes so repair is imperceptible from 10 feet. Remove and replace components that cannot be satisfactorily touched up.

END OF SECTION