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SECTION 08630 -METAL-FRAMED SKYLIGHTS

Part 1. General

1.01 Scope

- A. Structural design, engineering, fabrication, and Installation of the entire skylight system to include extruded aluminum framing, integral closures, trim, and perimeter flashing.
- B. Fasteners, anchors and related reinforcement of the framing system as required to resist design loads.
- C. Glass and glazing materials including gaskets, sealants, setting blocks, backer rods, and related materials.
- D. Installation of the entire metal-framed skylight system.
- E. Single Subcontract Responsibility: Retain a single firm or company, hereinafter referred to as "Skylight Contractor" for design, fabrication and installation of Work of this Section and related Sections so as to establish undivided responsibility for entire system.

1.02 Related Work

- A. Section 05120: Structural Steel
- B. Section 05500: Metal Fabrications
- C. Section 07600: Flashing and Sheet Metal
- D. Section 08800: Glazing
- E. Section 08900: Glazed Curtain Walls

1.03 References

- A. Aluminum Association (AA): Specifications for Aluminum Structures SAS-30.
- B. American Architectural Manufacturers Association (AAMA)
- C. American Society for Testing and Materials (ASTM).
- D. American Institute of Steel Construction (AISC).
- E. American National Standards Institute (ANSI).

1.04 Performance Criteria

- A. Framing system including glazing material shall be designed to support design loads as prescribed by the governing building code, and/or specified herein:
 - Negative Wind Load.....PSF
 - Positive Wind Load.....PSF
 - Snow Load.....PSF
 - Concentrated Load.....lbs.

- B. Thermal load of +/- 60 degrees F from ambient temperature without causing buckling, stresses on glass, failure of seals, undue stress on structural elements, reduction of performance or other detrimental effects.
- C. Compression flanges of flexural members may be assumed to receive effective lateral bracing only from anchors to the building structure, and horizontal glazing bars or interior trim which are in contact with 50% of the member's total depth.
- D. Thermal breaks shall be assumed to have no ability to transfer shear stress for composite action of flexural members. Elements joined by a thermal break shall be assumed to act separately.
- E. The maximum allowable deflection of any framing member normal to the plane of the glass shall not exceed L/175. For spans 20'-0" or greater the maximum allowable deflection shall not exceed L/240.
- F. The maximum allowable deflection of any framing member parallel to the plane of the glass shall not exceed 1/8".
- G. Allowable air infiltration shall not exceed 0.06 CFM of the total glazed surface area when tested in accordance with ASTM E283 at static pressure of 6.24 PSF.
- H. No uncontrolled water leakage shall occur when the system is tested in accordance with ASTM E331 at a static pressure of 15 PSF>
- I. No uncontrolled water leakage shall occur when the system is tested for dynamic water resistance in accordance with AAMA 501 at a static pressure of 6.24 PSF.

1.05 Submittals

- A. Submit one set of Vellum and two sets of shop drawings showing plans, elevations, and sections as required to fully describe the skylight construction for the Architect's approval prior to starting fabrication.
- B. Submit structural calculations for the Architect's approval prepared in accordance with the Aluminum Association's Specifications for Aluminum Structures (SAS-30) by a licensed professional engineer qualified in the design of self supporting sloped glazing systems.
- C. Submit samples of each type of finish (color charts or range samples) and glazing materials for the Architect's approval prior to fabrication. Samples of glazing material shall consist of 2 pieces – 12" square. Samples of aluminum finish shall consist of 2 pieces – 8" long.
- D. Submit a Test Report from an Independent Testing Laboratory that substantiates the skylight system meets the performance criteria of paragraphs 1.04G, 1.04H, and 1.04I.
- E. Submit manufacturer's written certification that the skylight is warranted per paragraph 1.07 of this specification.

1.06 Quality Assurance

- A. Work of this section, including design, engineering, fabrication, finishing, preparation at the job site, erection and glazing of the skylight system shall be the responsibility of the skylight manufacturer. The manufacturer shall be regularly engaged in the preceding phases of construction of skylights and be able to demonstrate that he has successfully performed on comparable projects over the previous ten years.
- B. Contract documents are based on products manufactured by ACURLITE Structural Skylights, Inc., 1017 N. Vine St. P.O. Box 5, Berwick, PA 18603, and (570) 759-6882.
- C. Substitutions will be considered only when all of the following conditions have been met:
 - 1. Optional manufacturers pre-qualify to bid not less than ten (10) days prior to bid closing date.

2. The Architect submits complete detailed drawings for review.
3. Structural calculations, prepared by a licensed engineer in the state which the project is located, showing sizes of framing members and loads applied to the support structure, based on the design loads of this specification are submitted for review.
4. Prospective manufacturers must furnish evidence of their ability to perform, including a list of projects of similar design and complexity completed within the last ten years.
5. Prospective skylight systems must be manufactured by a firm with a minimum of ten (10) years experience in the fabrication and installation of custom aluminum framed skylights.

1.07 Warranty

- A. Skylight manufacturer shall warrant that the framing system will be free of defects in materials and workmanship for a period of twenty (20) years from date of substantial completion.
- B. All flouropolymer (Kynar) finishes shall be warranted for color and film integrity for a period of twenty (20) years from date of application.
- C. Glazing materials shall be warranted against defective materials, seal failure, and defects in manufacture per the glazing manufacturer's standard warranties, but not less than ten (10) years; only 5 years delamination and breakage is not included..
- D. Skylight manufacturer/installer shall guarantee that the installation will remain weather tight for a period of twenty (20) years from date of substantial completion

Part 2. Products

2.01 Framing System

- A. Extruded aluminum framing members to be 6063-T5, 6063-T6, or 6061-T6 alloy and temper. Other alloys and tempers may be used proved they do not void the warranties required in paragraph 1.07. Any substituted alloys and tempers must be clearly indicated on the shop drawings and in the structural calculations.
- B. Thickness of structural framing members shall depend on the design loading, cross sectional configuration, and fabrication requirements.
- C. Rafter bars shall have condensation gutters as a portion of the extrusion. Horizontal cross bar gutters to sit on top of and drain into rafter gutters. Skylight systems with in line gutters. Or guttering systems that require sealant, or systems using horizontal attached with shear blocks that require sealants are unacceptable skylight systems.
- D. All formed aluminum flashing and closures to be a minimum of .060 inches in thickness.
- E. Snap on covers and miscellaneous non-structural trim shall be the minimum thickness recommended by the Aluminum Extruder.
- F. Provide tubular shapes and profiles of manufacturer's standard construction for members of the skylight systems. Web, Flange and/or "I" Beam Systems are unacceptable.
- G. Locate weep holes to positively drain condensation to exterior of skylight.

2.02 Aluminum Finish

All exposed aluminum shall receive one or more of the following finishes (Architect to select):

- A. Two coat flouropolymer (Kynar 500) finish complying with AAMA 605.2. Color to be selected by Architect.

2.03 Glazing Gaskets

- A. Continuous extruded black E.P.D.M. or silicone compatible gasket to meeting or exceeding the following:

Hardness (Shore A)	60 +/- durometer
Tensile Strength	2000 psi
Elongation	405%

2.04 Anchors and Fasteners

- A. Aluminum or stainless steel of a type, which will not cause electrolytic action or corrosion. Locate pressure cap fasteners a minimum of 8" on center.
- B. All lag screws, sleeve, stud, and through bolt-structural connections shall be cad plated.
- C. All exposed fasteners to be finished to match aluminum frame.
- D. Conceal fasteners where possible.

2.05 Glazing Materials (see specification section 08800)

- A. Sloped Glazing Units to be 1-5/16" Insulated Glass Unit. Glass Make up to be Solarban 60 H.S./ Clear H.S. Laminated with .060 PVB Interlayer.

2.06 Sealants

- A. Skylight manufacturer shall be responsible for the selection of all sealants.
- B. All surfaces shall be cleaned and primed in accordance with the sealant manufacturers' guidelines.
- C. All exterior seals shall be black in color. (Or standard color sealants as available)

Part 3. Installation

- A. Skylight installer shall notify the general contractor of obvious deficiencies or dimensional errors in the support system and/or adjacent construction. No installation work shall be performed until the deficiencies are corrected or written authorization is given to proceed with the as-built construction.
- B. All materials shall be delivered, stored, and covered to protect factory finishes from weather damage and construction dirt until installed.
- C. Glazing materials shall be packaged to prevent breakage.
- D. Skylight materials shall be installed in strict accordance with manufacturer's erection drawings and field instruction.
- E. Set skylights plumb, level, and true to line, without warp or rack of frames or panels and anchor securely in place in accordance with approved shop drawings.
- F. Contact areas between aluminum and dissimilar materials shall be isolated with a protective coating or plastic strip to prevent electrolytic corrosion.
- G. Installer shall remove all labels, part number markings, and excess sealants from skylight components during installation.
- H. The general contractor shall perform final cleaning and physical protection of all installed materials.

END OF SECTION 08630