

SECTION 086200 – UNIT SKYLIGHTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Prefabricated Fixed Skylights
- B. Prefabricated Vending Skylights/ Smoke Vents

1.02 REFERENCES

- A. Architectural Aluminum Manufacturers Association (AAMA)
 - 1. Specifications for Aluminum Structures.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).
 - 1. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- C. ASTM International (ASTM):
 - 1. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- D. Factory Mutual System (FM Global):
 - 1. FM - Approval Guide, Chapter 18 - Building Materials.
 - 2. FM Standard 4430 - Test Criteria for Heat and Smoke Vents.
- E. National Fenestration Rating Council (NFRC):
 - 1. NFRC 100 - Procedure for Determining Fenestration Product U-Factors.
 - 2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance of Normal Incidence.
- F. North American Fenestration Standard (NAFS):
 - 1. AAMA\WDMA\CSA\101\I.S.2\A440 - The Voluntary Performance Specification for Windows, Skylights, and Glass Doors.

1.03 PERFORMANCE REQUIREMENTS

- A. Skylights must conform with all federal, state and local code bodies having jurisdiction, and be designed to withstand all forces of nature deemed necessary by those code bodies for the specified project location.
- B. Plastic unit skylights shall conform to recommendations of the AA Specifications for Aluminum Structures.
- C. Skylights must be designed to carry a minimum 30 psf tributary roof load or greater per site as specified in the current International Building Code or prevailing model code.
- D. Skylights must tested and labeled in accordance to AAMA\WDMA\CSA\101\I.S.2\A440 as required by Section 2405.5 of the International Building Code (current version in project location).

- E. Drop Test:
 - A 200 lb (91 kg) drop test from a height of 24 inches (610mm) above the center (highest point) of dome shape and at mid points of both the 5 foot (1524mm) and 6 foot (1829mm) side (approximately 15 inches (381mm) and 18 inches (457mm) from center).
 - The 200 lb (91 kg) load must be contained within a flexible bladder or sack having approximate dimensions no larger than 30 inches long, 20 inches wide, and 8 inches high (762mm x 508mm x 203mm), filled with course sand or pea gravel.
 - The dome must withstand the sack drop without inverting or breaking.
 - Finished skylight domes sealed in frame must also handle 500 lb (227 kg) on 1 square foot (.09 sm) point loading without inverting.
 - The drop test must be witnessed and certified by the test laboratory which provides the NAFS certification.
- F. Skylights must be certified by the NFRC.
- G. Skylights must be certified by the NAFS.
- H. Manufacturer to provide third party testing reports certifying Visible Light Transmittance (VLT) and Haze properties of glazing type and levels as required for ASHRAE 90.1 under ASTM D1003.
- I. Smoke Hatch / Smoke Venting Skylights must be Factory Mutual approved.

1.04 SUBMITTALS

- A. General: Submit in accordance with Section 013300.
- B. See Section 013310 for Submittal Schedule.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.
- B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.

1.06 DELIVERY, STORAGE, AND HANDLING

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

1.07 PROJECT 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. General: Warranties specified in this Article shall not deprive the rights under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Subcontractor under requirements of the Contract Documents.
- B. Manufacturer's Warranty: At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.
 - 1. Warranty Period: Manufacturer's standard but not less than 5 years after date of Project completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Baylight Prismatic Skylights; Bay Industries, P.O. Box 9229, Green Bay WI 54308-9229.
 - a. Email: clewis@bayinsulation.com.
 - b. Web: http://www.bayindustries.com/bay_ins/bis.html#bps.com.
 - 2. Acralight Solar Commercial Skylights; contact (800) 325-4355.
 - a. Web: <http://acralight.com/commercial-industrial>
 - 3. Sunoptics Prismatic Skylights, 6201 27th Street, Sacramento, CA 95822 contact (800) 289-4700
 - a. Web: <http://www.sunoptics.com>
 - 4. Or equal, as approved by Architect.

2.02 FIXED SKYLIGHT UNITS

- A. Glazing Panels:
 - 1. Configuration: Signature Series Dome – Double Glazed.
 - a. Outer Lens: SR 40 - 100 percent impact modified clear prismatic acrylic of sufficient thickness recommended to meet the specified performance requirements. Tested for CLASS 1 Hail Resistance (1" hail).
 - b. Outer Lens: FBC – HVHZ Approved Polycarbonate
 - c. Inner lens: SR25 White Prismatic Acrylic Lens.
 - 2. Energy Requirements: Glazing material must have a maximum light distribution characteristic that maximizes the shading factor. Per Addendum D of ASHRAE 90.1–2007, the diffusing qualities of glazing must have a minimum haze factor of 90 percent or greater. The combined inner/outer lens target values shall be as follows:
 - a. Light Transmittance: 67.8 percent minimum. CLASS 1 & CLASS 3 ACRYLIC
 - b. Light Transmittance: 60.0 percent minimum. FBC-HVHZ Approved Polycarbonate
 - c. Diffusion / Haze Factor: 100 percent min.
 - d. Solar Heat Gain Coefficient (SHGC): 0.60 maximum. NFRC 200
 - e. "U" Factor: 0.75 or lower (glazing and framing) in accordance with NFRC 100 or "unlabeled skylight" default requirements of ASHRAE 90.1 – 2007
 - 3. Hail Resistance Level: Class 1 (1" hail) as tested by certified engineering firm.
- B. Frame:

1. ASTM B 221 alloy 6063-T5 extruded aluminum frame with extruded aluminum dome retaining angle, Insulated thermal break, and integral condensate gutter.
2. Finish: Manufacturer's standard mill finish.
3. Provide pre-installed 1 1/2 inch (38mm) x 1/4 inch (6mm) foam rubber gasket between frame and curb.
4. Provide weather sweep attached to frame.
5. Curb Dimensions: Determined by skylight manufacturers inside dimension of extruded aluminum. Recommend a 1/2 inch (13mm) surround around finished and final flashed curb.

2.03 ACCESSORIES

- A. Fasteners (For anchorage of skylight to roof curb): #12 x 1 1/2 inch (38mm) 300 series stainless steel screws with washers. Provide fasteners in sufficient quantity for complete installation.
- B. Washers: Neoprene/stainless steel bonded washers.

2.04 FABRICATION

- A. Skylights must be factory assembled and glazed ready for installation.
- B. Fabricate skylights weather tight and free of visual distortions and defects.
- C. Protect exterior drip / counter flashing and drainage ports from weather and air-borne debris.
- D. Miter and full penetration weld all corners of curb and retaining frames.
- E. Retaining frames that secure the glazing panels along each side under spring tension need not be welded and must be sealed with a silicone sealant along the full perimeter of the retaining frame. Skylight frames must be pre-drilled for anchorage to roof curbs.
- F. Seal glazing panels to base frame allowing for sufficient expansion and contraction. Provide exterior weep hole arrangement.

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 instructions.

3.04 PROTECTION

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

END OF SECTION 086200