

**SECTION 08620****COMMERCIAL CURB-MOUNT ACRYLIC DOUBLE DOME SKYLIGHTS**

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 REFERENCE STANDARDS

- A. ASTM D 542: Standard Test Method for Index of Refraction of Transparent Organic Plastics
- B. ASTM D 635: Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
- C. ASTM D 638: Standard Test Method for Tensile Properties of Plastics
- D. ASTM 790: Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- E. ASTM D 1003: Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics
- F. ASTM D 1929: Standard Test Method for Determining Ignition Temperature of Plastics
- G. ASTM D 2843: Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics

## 1.3 SUMMARY

- A. This Section includes the following:
  - 1. Curb-mount plastic skylights.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 6 Section "Rough Carpentry" for wood curbs and nailers.
- C. Refer to roofing system Sections for roofing accessories to be built into the roofing system to accommodate Work of this Section.

## 1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide unit skylights capable of withstanding loads indicated without failure. Failure includes the following:
  - 1. Thermal stresses transferred to the building structure.
  - 2. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing.
  - 3. Noise or vibration created by thermal and structural movement and wind.
  - 4. Loosening or weakening of fasteners, attachments, and other components.
  - 5. Sealant failure.

#### 1.5 SUBMITTALS

- A. Product Data: For each type of skylight specified, including details of construction relative to materials, dimensions of individual components, profiles, finishes, and glazing light transmission and thermal characteristics.
- B. Shop Drawings: Show fabrication and installation of skylights, including plans, elevations, sections, details of components, and attachments to other units of Work.
- C. Samples for Selection: Manufacturer's color charts showing a full range of colors available for each type of skylight glazing, retainer, frame, and curb indicated.

#### 1.6 DELIVERY, HANDLING, STORAGE

- A. Deliver products in manufacturer's original containers dry, undamaged, seals and labels intact.
- B. Store and protect products in accordance with manufacturer's recommendations.

#### 1.7 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide plastic sheets identical to those tested for the following fire-test-response characteristics, per ASTM test method indicated below, by UL or other testing and inspecting agencies acceptable to authorities having jurisdiction. Identify plastic sheets with appropriate markings of applicable testing and inspecting organization.
  - 1. Self-Ignition Temperature: 750 deg F (343 deg C) or greater when tested per ASTM D 1929 on plastic sheets in the thickness intended for use.
  - 2. Smoke density of 15% or less when tested per ASTM D 2843 on plastic sheets in the thickness intended for use.
  - 3. Relative-Burning Characteristics: As follows, when tested per ASTM D 635:
    - a. Acrylic: Burning rate of 1.18 inch per minute or less when tested on plastic glazing with a nominal thickness of 0.118 inch or the thickness intended for use. Burning rate of 0.71 inch per minute or less when tested on plastic glazing with a nominal thickness of 0.235 inch.

#### 1.8 WARRANTY

- A. General: Warranties specified in this Section shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and

shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

- B. Skylight Warranty: Provide written warranty signed by manufacturer, agreeing to repair or replace work that exhibits defects in materials or workmanship and guaranteeing weathertight and leak-free performance. "Defects" is defined as uncontrolled leakage of water and abnormal aging or deterioration.
  - 1. Warranty Period: 5 years from date of Substantial Completion.
- C. Plastic Warranty: Provide written warranty signed by manufacturer agreeing to repair or replace work that has or develops defects in the plastic. "Defects" is defined as abnormal aging or deterioration.
  - 1. Warranty Period for Acrylic: 5 years from date of Substantial Completion against yellowing.
- D. Finish Warranty: Provide written warranty signed by manufacturer agreeing to repair or replace work with finish defects. "Defects" is defined as peeling, chipping, abnormal aging or deterioration, and failure to perform as required.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following or approved substitute.
  - 1. VELUX America, Inc.
- B. Substitutions: Manufacturers shall not be considered without prior approval in writing no later than ten (10) calendar days prior to bid. Substitute manufacturers must have been in the custom skylight business for not less than a period of 15 years and must submit to the Architect the following:
  - 1. List of similar projects successfully completed within the last five years.
  - 2. Proof of financial capability.
  - 3. Compete details of proposed skylight.
  - 4. Complete specifications for Architect's review.

### 2.2 MATERIALS

- A. Extruded aluminum retaining angle. Extruded aluminum allow 6063-T5 with minimum effective thickness of 0.055 inch. Mitered and welded corner assembly in mill finish.
- B. Extruded aluminum inner frame with integral condensation gutter. Extruded aluminum alloy 6063-T5 with minimum effective thickness of 0.055 inch unless noted. Mitered and welded corner assembly in mill finish.
- C. Double-sided very high bond adhesive closed cell foam tape glazing seal.
- D. Plastic Sheets: Monolithic, formable, transparent (colorless or bronze tinted) or translucent (white) sheets with good weather and impact resistance. Glazing seal with back beaded dow silicone.

1. Acrylic inner and outer dome
  2. ASTM D-1003 light transmittance of 91% for clear acrylic
  3. ASTM D-542: reflective index of 1.49
  4. ASTM D-638: Tensile strength – rupture 10.8 M PSI / Elasticity 427 M PSI
  5. ASTM D-790: Flexural strength: -Rupture 14.9M PSI / Elasticity 427 M PSI
  6. Thermo-formable. Type UVA (formulated with ultraviolet absorber)
- E. Fasteners: 8x1 stainless steel – hex washer head, provided by installer. Skylight assembly fasteners zinc electroplated.
- F. Thermal break optional unless other wise noted. ½” polyurethane thermal break..

### 2.3 PLASTIC SKYLIGHT UNIT COMPONENTS

- A. General: Factory-assembled, curb-mounted unit consisting of plastic glazing welded in place by a 6063-T5 extruded aluminum retaining angle and resting on an extruded aluminum inner frame
1. Products: Provide Model CM-1(dome), CM-2 (pyramid) or CM-3 (hip-ridge).
- B. Curb: Made by others on site.
- C. Condensation Control: Fabricate skylight units with integral internal gutters and nonclogging weeps to collect and dispose of condensation (optional unless noted).
- D. Thermal Break: Fabricate skylight units with thermal barrier separating interior metal framing from materials exposed to outside temperature.(optional unless noted)
- E. Size: See Schedule.
- F. Glazing:
1. Thermoformed acrylic.
    - i. CM-1 Profile: Double dome,
      1. Inner Glazing Color: Colorless, transparent acrylic.
      2. Outer Glazing Color: Colorless, transparent acrylic.
    - ii. CM-2 Profile: Pyramid outer glazing and dome inner glazing
      1. Inner Glazing Color: Colorless, transparent acrylic.
      2. Outer Glazing Color: Colorless, transparent acrylic.
    - iii. CM-3 Profile: Hip-Ridge outer glazing and dome inner glazing
      1. Inner Glazing Color: Colorless, transparent acrylic.
      2. Outer Glazing Color: Colorless, transparent acrylic.
  2. Thermoformed polycarbonate.
    - i. CM-1 Profile: Double dome,
      1. Inner Glazing Color: Colorless, transparent acrylic.
      2. Outer Glazing Color: Colorless, transparent polycarbonate.
    - ii. CM-2 Profile: Pyramid outer glazing and dome inner glazing
      1. Inner Glazing Color: Colorless, transparent acrylic.
      2. Outer Glazing Color: Colorless, transparent polycarbonate.
    - iii. CM-3 Profile: Hip-Ridge outer glazing and dome inner glazing
      1. Inner Glazing Color: Colorless, transparent acrylic.
      2. Outer Glazing Color: Colorless, transparent polycarbonate.

## 2.4 ACCESSORIES

- A. Skylight Accessory Options:
  - 1. No accessories available.

## 2.5 FABRICATION

- A. Framing Components: As follows:
  - 1. Factory fit and assembled components.
  - 2. Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.
  - 3. Fabricate components to drain water passing joints and to drain condensation and moisture occurring or migrating within skylight system to the exterior.
  - 4. Fabricate components to accommodate expansion, contraction, and field adjustment, and to provide for minimum clearance and shimming at skylight perimeter.
  - 5. Fabricate components to ensure that glazing is thermally and physically isolated from framing members.
  - 6. Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
  - 7. Fit and secure joints by heliarc welding.

## 2.6 ALUMINUM FINISHES

- A. Mill Finish: Manufacturer's standard satin mill finish. Unless otherwise noted.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting skylight performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 PREPARATION

- A. Metal Protection: As follows:
  - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
  - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
  - 3. Where aluminum will contact pressure-treated wood, separate dissimilar materials by methods recommended by manufacturer.

## 3.3 INSTALLATION

- A. General: Comply with manufacturer's written instructions for protecting, handling, and installing skylight components.
- B. Coordinate with installation of roof deck and other substrates to receive skylight units.
- C. Coordinate with installation of vapor barriers, roof insulation, roofing, and flashing as required to assure that each element of the work performs properly and that combined elements are waterproof and weathertight. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.
- D. Counter Flashing: Where counter flashing is required as component of the skylight, install to provide an adequate waterproof overlap with roofing or roof flashing (as counterflashing). Seal with thick bead of mastic sealant, except where overlap is indicated to be left open for ventilation.

## 3.4 CLEANING AND PROTECTION

- A. Clean exposed metal and plastic surfaces according to manufacturer's instructions. Touch up damaged metal coatings.
- B. Clean and polish plastic skylight units, inside and out, not more than 5 days prior to date of substantial completion.

**END OF SECTION 08620**