

CLUSTER SKYLIGHT SYSTEM

Section 08620

1.1 Summary

- A. This section includes the following:
 - a. Deck – Mounted cluster skylight system
 - b. Curb – Mounted cluster skylight system
 - c. Unit Skylights: A factory-fabricated skylight that encapsulates Glass assembly and fuses it to a seamless reaction injection molded polyurethane frame. This manufacturing process of homogeneously joining two like materials negates the affects of thermal expansion and contraction and assures a permanent weather tight bond requiring no sealants or tapes.

- B. Related Sections : This section contains items related to the following sections:
 - a. Division six – Rough Carpentry for wood curbs and mailers.
 - b. Division seven – Roof Accessories , Flashing or Sheet Metal
 - c. Division eight – Skylights

- C. Roofing accessories to be built into the roofing system to accommodate work for this section.

1.2 Performance Requirements

- A. General: V – Tech Skylights capable of wistanding loads indicated without failer. Failure includes the following.
 - 1. Thermal stress transferred to the building structure
 - 2. Framing member transferring stresses, including those caused by thermal and structural movement including glazing.
 - 3. Noise or vibration created by thermal m wind and structural movement.
 - 4. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
 - 5. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics
 - 6. ASTM D 746 - Test Method for Brittleness Temperatures of Plastics and Elastomers by Impact.
 - 7. ASTM D 790 - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

8. ASTM D 1929 - Standard Test Method for Determining Ignition Temperature of Plastics.
9. ASTM D 2565 - Xenon-Arc Exposure of Plastics Intended for Indoor or Outdoor Applications (Weather-Ometer)
10. ASTM D 2843 - Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
11. ASTM D4226 - Standard Test Methods for Impact Resistance of Rigid Poly(Vinyl Chloride) (PVC) Building Products.
12. ASTM D 4803 - Standard Test Method for Predicting Heat Buildup in PVC Building Products.
13. ASTM E 283 - Standard test method for rate of air leakage through exterior windows, curtain walls and doors. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure.
14. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure.
15. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
16. ASTM E 547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.

- B. Structural Loads: Unit skylights meet AAMA requirements. Structural Calculations provided on a project basis.

1.3 Submittals

- A. Product Data: Include details of construction and installation, relative to applicable roofing materials.
- B. Samples for selection: Manufactures color charts showing a full range of colors available for interior aluminum finish. Exterior framing will be mill finish
- C. 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.

- D. Shop Drawings: Indicate configurations, dimensions, locations, fastening methods, and installation details.
- E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

1.4 Warranty and Quality Assurance

1. Skylight Warranty : Provide written 10 year warranty signed by manufacturer agreeing to repair or replace work that has or develops defects on Adaptor

2. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in installing products similar to those specified in this section with minimum five years documented experience.
- C. Mock-Up:

Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

- 1. Finish areas designated by Architect.
- 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
- 3. Refinish mock-up area as required to produce acceptable work.

1.5 Materials and Fabrication and Installation

A. Curb Frame: Fabricated from 1100-h14 , 3009 , 5052 alloy aluminum sheet exterior frame with a minimum 1/8" thickness. Provide integral 4" gutter system with fully welded seams for waterproof quality system.

B. Intragal 4" x 4" gutters formed from 6063 extruded aluminum minimum 1/8" thickness

C. Shapes and Size: As indicated by model number

D. Fasteners: Same metal as metals being fastened, or non-magnetic stainless steel or other non-corrosive metal as recommended by SOT.

E. Factory fit to existing curb (s) or structure.

F. Fabricate components to drain all water and condensation.

G. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer, sealant, tape or ice and water.

H. Comply with manufacture installation for protecting, handling and installing skylight cluster

I. Coordinate with installation of roof deck and other substrates to receive skylight units including vapor barriers, rood insulation, roofing, and flashing as required to insure and leak proof and quality installation.

J. Anchor units securely to support structural substrate, adequate to withstand lateral and thermal stresses ass wall as inward or outward pressure.

K. Counter Flashing: Where counter flashing is requires as components of the skylight, install to provide an adequate waterproof overlap with roofing or thru wall penetrations. Flashing to be set in 795 Dow Corning

1.6 CURB MOUNTED SKYLIGHT

- D. General Description: Factory-fabricated, curb unit consisting of Glass assembly encapsulated within an injection molded polyurethane frame designed to be mounted on a separate roof curb supplied by others.
- E. Performance Requirements Skylights tested in conformance with AAMA/WDMA/CSA 101/I.S.2/A440 - Standard Specification for Windows, Doors and Unit Skylights as follows.
1. ASTM E 283: Air Infiltration at 1.57 psf(75 pa) and 6.24 psf (300pa)
Allowed: 1.5 L/s/m²
Results: <0.01 cfm/ft² (<0.1 L/s/m²).
 2. ASTM E 547 and ASTM E331-00: Water resistance test, Results: no leakage.
 3. ASTM E 330: Uniform load deflection, Results: no damage 140 psf (6720 Pa) positive/negative load with a measured <.010 inch (<1 mm) positive/negative deflection.
 4. Fire Performance: Provide unit skylight glazing materials tested by UL or Intertek Testing Services (Warnock Hersey Listed) with labels indicating compliance.
 5. Self-Ignition Test: 650 deg F (343.33 deg C) or greater when tested in accordance with ASTM D 1929.
 6. Smoke Density: 75 or less when tested in accordance with ASTM D 2843.
 7. Combustibility:
 - a. Acrylics Average Burning Rate: Maximum 2.5 inch/minute (63.5 mm/minute), when tested in accordance with ASTM D 635.
 - b. Polycarbonate Extent of Burning of Glazing: Maximum 1 inch (25.4 mm), when tested in accordance with ASTM D 635.
8. Frame material
- a. ASTM D1929: Spontaneous ignition temperature, 680 degrees F (360 degrees C).
 - b. ASTM D 2565: Accelerated weathering tests: Exposure Time 2900 hours.
 - c. ASTM D 638: Tensile properties, retained 88 percent tensile strength, 91 percent elongation.

- d. ASTM D 790: Flex modulus, retained 113 percent flexure modulus.
- e. ASTM D 4803: Heat build-up, 98 minutes to equilibrium.
- f. ASTM D 4226: Impact resistance at 23 degrees C, 74 in-lbs (0.60 in-lbs/mil), passed.
- g. ASTM D 746: Brittleness at minus 40 degrees C, passed.

C Frame Finish: Aliphatic Polyurethane, color as follows:

- 1. Black.

D Glass Selection – Meets 2010 Energy Code Requirements

- 1. Standard: LoE, Argon Filled Tempered Glass, No Lamination.
- 2. Safety: LoE, Argon Filled Tempered Glass with 0.030 inch Lamination.
- 3. Hurricane: LoE, Argon Filled Tempered Glass with 0.120 inch Lamination.

E Dimensions –

2. Glass Curb Mounted Unit:

- a. Model 4x4 CMC: 50" x 50" Max Outside Curb Dimensions
- b. Model 2x4 CMC: 26" x 50" Max Outside Curb Dimensions
- c. Model 2x2 CMC: 26" x 26" Max Outside Curb Dimensions

- d. Model 3x3 CMC: 34" x 34" Max Outside Curb Dimensions

1.7 Curb-Mounted Model:

- 8. Build curb to the height necessary to meet local building codes. Waterproof the curb completely with self-adhering roofing underlayment membrane.
 - a. Begin by installing the first strip at bottom and extend up to the top of the curb.
 - b. Next, install the two side strips, extending up to the top of the curb and overlapping the bottom strip.
 - c. Install the top strip, extending up to the top of the curb and overlapping the side strips.
- 9. Flash the curb.
 - a. Install the Base Flashing at the bottom of the curb.
 - b. Install Step-Flashing on each side of the curb overlapping the base flashing.
 - c. Install the Base Flashing at the top of the curb overlapping the step flashing on each side of the curb.
- 10. Apply a 1 inch (25.5 mm) bead of polyurethane mastic (supplied in the VTECH Installation Kit), to the top of the curb. Position the bead on the outer perimeter of the curb.
- 11. Set skylight on the curb and press firmly into place.
- 12. Secure skylight to the curb with screws provided in the installation kit. Install all screws at the pre-marked anchor points on the skylight.
- 13. Should there be a gap 3/8 inch to 1/2 inch (9.5 mm to 12.5 mm) between the skylight and the curb, a shim made of pressure treated wood may be inserted in the gap, prior to installing the anchor screws. The shim length must be equal to the inside length of the skylight.

F. Remove labels and protective material from surfaces.

- G. Wash down exposed surfaces; wipe surfaces clean.
- H. Remove excess sealant.
- I. Only waterproof and weather tight assemblies will be acceptable.

1.2 PROTECTION

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

END OF SECTION