

SECTION 08 62 00
SKYLIGHTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Field assembled unit skylights.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Provide skylights capable of withstanding loads and thermal and structural movements as required by code without failure. Failure includes the following:
1. Supporting-frame deflection exceeding specified limits.
 2. Polycarbonate-insulating-panel deflection exceeding manufacturer's recommended limits or causing panel failure.
 3. Thermal stresses transferred to the building structure.
 4. Noise or vibration created by thermal and structural movement and wind.
 5. Loosening or weakening of fasteners, attachments, and other components.
 6. Sealant or gasket failure.
 7. Uncontrolled water in the integral weep transfer systems.
- B. Design thrust and loading of the framing system including translucent glazing material to support the following load requirements:
1. As required by Local and State code.
 2. Seismic load as required by applicable code earthquake zone for project location.
- C. Thermal Movement: Provide skylights that are design to allow for thermal movement resulting from the following maximum changes in ambient and surface temperatures 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- D. Air Infiltration: Provide skylights with maximum air leakage of 0.06-cfm/sq. ft. of surface when tested according to ASTM E 283 at a minimum static-air-pressure differential of 15 pounds force per square foot.
- E. Water Penetration: Provide skylights that incorporate a weep system when tested according to ASTM E331 at a minimum static pressure differential of 20 percent of positive design wind load, but not less than of 15 pounds force per square foot.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's data for unit skylights. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Submit shop drawings showing fabrication and installation system including plans, elevations, sections, details, and attachments to other Work. Show jointing, finishes, hardware, accessories, anchorage methods and thickness of dome material.
- C. Samples: For each type of exposed finish required, in a representative section of each unit in manufacturer's standard size.

1.4 DELIVERY, STORAGE AND HANDLING

- A. All materials are to be unit labeled and shipped to site in protective packaging.
- B. Storage and handling is to be provided in strict compliance with manufacturer's instructions and recommendations, including storing panels on the long edge several inches above ground, blocked and under cover to prevent warping. Protect from damage from sunlight, weather, excessive temperatures and construction operations.
- C. Handling: Comply with manufacturer's instructions.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal-framed skylights that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Noise or vibration caused by thermal movements.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - d. Adhesive or cohesive sealant failures.
 - e. Water leakage.
 - 2. Warranty Period: Five years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.
 - 1. Failures include, but are not limited to, checking, crazing, peeling, chalking, and fading of finishes.
 - 2. Warranty Period: Five years from date of Substantial Completion.
- C. Translucent Glazing Material Warranty: Provide written warranty as provided by manufacturer, agreeing to repair or replace glazing materials, which exhibit defects in materials or workmanship.
 - 1. Warranty Period: 10 years from date of manufacture.

PART 2 - PRODUCTS

2.1 UNIT SKYLIGHTS

- A. General: Field-assembled units that include glazing, extruded-aluminum glazing retainers, gaskets, and inner frames and that are capable of withstanding design loads indicated.
- B. Configuration: Pyramid.
- C. Unit Size: As indicated on Drawings

2.2 PANELS

- A. Polycarbonate composite panels:
 - 1. Thickness of composite panel framing shall be 25mm
 - 2. Insulating Value of panel: U-factor of .26
 - 3. Translucent polycarbonate panel color as selected from manufacturer's standard colors. (Clear Light Transmission 69%, Opal Light Transmission 42%, and Bronze Light Transmission 35%)
 - 4. Exposed fasteners are not permitted in the composite panel framing.
- B. Each glazing panel within the skylight system shall be designed to span a 4-ft wide bay as a one-piece panel. Standing seam or interlocking polycarbonate clip design panels to make up this bay spacing are not acceptable. All panel connection joints must be sealed off from dirt and outside elements.
 - 1. Each 4 foot wide polycarbonate panel shall be sealed around the entire perimeter by a continuous extruded aluminum channel and gasketed on both sides of the system with a minimum capture of 1 inch to allow for expansion and contraction of the polycarbonate panel.
 - 2. Composite polycarbonate panels shall be glazed flush within the glazing system, no standing seam or interlocking clips or through fasteners shall be used to secure the panels to the structure.
 - 3. A continuous uni-directional breathable fiberglass weep baffle to stop the infiltration of foreign materials into the polycarbonate sheet and allow the panel to breath shall seal all open ends of the polycarbonate panel.
 - 4. Composite panel design shall incorporate a weep transfer system to the exterior.
 - 5. All horizontal and vertical extrusion members shall be designed to mechanically interlock to insure fit, water transfer and strength of the composite panel system and anchored with concealed stainless steel screws into the interior screw boss.
- C. Composite Panel Performance:
 - 1. Impact resistance - Polycarbonate sheets withstand the impact of 16 lb dropped 25' without breakage.
 - 2. Impact tests - Exceeds Gardner Falling Dart limits; no rupture from 1/2" radius tip at 220 ft/lb. No penetration, 100 ft/lb involving air cannon with 1 1/2" diameter tip at 95 mph
 - 3. Hail Impact Tests - Exceeds ASTM E822 requirements.
 - 4. Ignition Properties - Sheets are tested in accordance with ASTM D1929. Model codes typically require Light Transmitting Plastic to have a self-ignition temperature of 650 degrees F (343 degrees C) or greater. Polycarbonate sheets meet this requirement with a self-ignition temperature of 986 degrees. Polycarbonate sheets melt at 800 degrees F
 - 5. Flame spread - Polycarbonate sheets are tested in accordance with ASTM E84. Model building codes typically do not specify a flame spread requirement. Values vary with thickness and range from 10 - 80. Polycarbonate sheets meet National Fire Protection Association (NFPA) Class A and UBC Class 1.

2.3 COMPONENTS

- A. Aluminum Components:
 - 1. Extruded Shapes: Extruded aluminum alloy 6063-T5 or 6063-T6.

2. Structural Sub-Framing: Structural tube system shall be fabricated of extruded aluminum alloy 6063-T6 designed to receive the factory glazed panel system. All interior gussets, clips, and connection are to be concealed within the structure tube system. No exposed interior fasteners in the tube framing are to be allowed.
 3. All exposed aluminum to have an architectural corrosion resistant finish equal to ANSI/AAMA 2604. Color to be selected from manufacturer's standards.
- B. Fasteners: Same metal as metal being fastened, nonmagnetic stainless steel, or other noncorrosive metal as recommended by manufacturer. Finish exposed fasteners to match material being fastened.
1. Where removal of exterior exposed fasteners might allow access to building, provide nonremovable fastener heads.
- C. Exposed Flashing and Closures: Aluminum sheet, minimum 0.40 INCH thick and finished to match panel-framing system.
- D. Condensation Control: Fabricate unit skylights with integral internal gutters and nonclogging weeps to collect and drain condensation to the exterior.
- E. Thermal Break: Fabricate unit skylights with thermal barrier separating interior metal framing from materials exposed to outside temperature.

2.4 ACCESSORIES

- A. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic, nominally free of sulfur and containing no asbestos fibers, formulated for 15-mil dry film thickness per coating.
- B. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- C. Elastomeric Sealant: ASTM C 920; Type S; Grade NS; Class 25; and Uses NT, G, A, and (as applicable to joint substrates indicated) O; recommended by unit skylight manufacturer and compatible with joint surfaces.
- D. Roofing Cement: ASTM D 4586, asbestos free, designed for trowel application or other adhesive compatible with roofing system.

2.5 FABRICATION

- A. Fabricate components that, when assembled, will have accurately fitted joints with ends coped, mitered, or butted to produce hairline joints free of burrs and distortion.
- B. Fabricate components to drain water-passing joints and to drain condensation and moisture occurring or migration within skylight system to the exterior.
- C. Fabricate components to accommodate expansion, contraction, and field adjustment and to provide for minimum clearance and shimming at skylight perimeter.
- D. Fabricate components to ensure that polycarbonate insulating panels and skin system is thermally isolated from the structural-framing members.
- E. Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.

- F. Fit and assemble components to greatest extent practicable before finishing.
- G. Reinforce members as required to retain fastener threads.
- H. Where fasteners are exposed to view, countersink fastener heads and finish them to match framing.
- I. Before shipping, shop-assemble, mark and disassemble components that cannot be permanently shop assembled.
- J. Fabricate flashing with weatherproof expansion joints and corners.
- K. Prepare framing to receive anchor and connection devices and fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.
- B. Coordination:
 - 1. Coordinate with other work which affects, connects with, or will be concealed by this Work.
 - 2. Coordinate with installation of roofing and flashing.

3.2 INSTALLATION

- A. Coordinate unit skylight installation with installation of substrates, vapor retarders, roof insulation, roofing, and flashing as required to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight.
 - 1. Unless otherwise indicated, install unit skylights according to construction details of NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Where metal surfaces of units will contact incompatible metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation recommended in writing by unit skylight manufacturer.
- C. Anchor unit skylights securely to supporting substrates.
- D. Set unit skylight flanges in thick bed of roofing cement to form a seal, unless otherwise indicated.
- E. Where cap flashing is indicated, install to produce waterproof overlap with roofing or roof flashing. Seal with thick bead of mastic sealant except where overlap is indicated to be left open for ventilation.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
 - 1. Water-Spray Test: Before installation of interior finishes has begun, skylights shall be tested according to AAMA 501.2 and shall not evidence water penetration.
- B. Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.4 CLEANING

- A. Clean exposed surfaces according to manufacturer's written instructions. Touch up damaged metal coatings.

END OF SECTION