

086200

UNIT SKYLIGHTS**PART 1-GENERAL****1.1 SUMMARY**

- A. This section includes the following:
 - 1. Curb-mounted plastic skylights with Thermal Translucent Glazing System.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 6 Section "Rough Carpentry" for wood curbs and nailers.
 - 2. Division 7 Section "Roof Accessories" for curbs, roof hatches, and smoke vents.
 - 3. Division 7 Section "Flashing and Sheet Metal" for metal flashing for skylights.
 - 4. Division 8 Section "Metal-Framed Skylights" for large site constructed skylights.
- C. Refer to roofing system sections for roofing accessories to be built into the roofing system to accommodate work of this section.

1.2 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. Weakening of fasteners, attachments, and other components.
- B. Structural Loads: Provide unit skylights that meet the requirements of American Architectural Manufacturer's Association (AAMA) publication "Voluntary Uniform Load Structural Standard for Plastic Domed Skylights" (AAMA 1606-82) which requires acrylic thickness adequate to withstand a positive and negative test pressure of 60 PSF.

1.3 SUBMITTALS

- A. Product Data Sheet: For each type of skylight specified, include details of construction and installation, relative to applicable roofing materials.
- B. Samples for Selection: Manufacturer's color charts showing a full range of colors available for each type of skylight glazing and Aluminum Finish.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide Thermoformed dome (Outer) fabricated from sheet 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:
 - a. Acrylic: 750 deg F (399 deg C) or greater when tested per ASTM D 1929 on plastic sheets in the thickness intended for use.
 - b. Impact Modified Acrylic: 750 deg F (399 deg C) or greater when tested per ASTM D 1929 on plastic sheets in the thickness intended for use.
2. Smoke Density Rating:
 - a. Acrylic: 13.5% or less when tested per ASTM D 2843 on plastic sheets in the thickness intended for use.
 - b. Impact Modified Acrylic: 3.8% at 6.0mm or less when tested per ASTM D 2843-99 on plastic sheets in the thickness intended for use.
3. Relative – Burning Characteristics: As follows, when tested per ASTM D 635:
 - a. Acrylic: Rate of Flame Spread of 1.18 inches (30 mm) per minute or less when tested on plastic glazing indicated below with a nominal thickness of 0.118 inch (3 mm) or the thickness intended for use. UL flammability rating of 94HB.
 - b. Impact Modified Acrylic: Rate of Flame Spread of 1.0 inches (25 mm) per minute or less when tested on plastic glazing indicated below with a nominal thickness of 0.236 inch (6 mm) or the thickness intended for use. UL flammability rating of 94HB.
- B. Fire-Test-Response Characteristics: Provide multi-wall cellular polycarbonate panel (Inner Horizontal Panel) fabricated from an approved cellular polycarbonate glazing (light transmitting) material identical to that tested with a CC1 fire rating classification per ASTM D-635 and filled with Nanogel® insulation material.
 1. Self-Ignition Temperature: 1110° F (599 deg. C) or greater when tested per ASTM 1929 on multi-wall cellular panel filled with Nanogel® Insulation in the thickness (16mm) intended for use.
 2. Smoke density of 450 or less when tested per ASTM D2843 on multi-wall cellular polycarbonate panel filled with Nanogel® Insulation in the thickness (16mm) intended for use.

1.5 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 weather-tight 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, chalking, fading, abnormal aging or deterioration, and failure to perform as required.

1. Warranty Period for Anodized Finish: 1 year from date of Substantial Completion for film integrity.
2. Warranty Period for Baked Enamel Finish: 1 year from date of Substantial Completion for film integrity.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by Wasco Products, Inc., Commercial Division, Sanford, ME (800-388-0293).
- B. Substitutions: Manufactures 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. Complete details of proposed skylight.
 4. Complete specifications for Architect's review.

2.2 MATERIALS

- A. Curb Frame: Bright white high performance PVC with Bronze cap stock and minimum effective thickness of 0.060 inch (1.5mm). Provide integral condensation gutter system with corners fully welded for water-proof quality.
- B. Retainer Frame: Extruded aluminum alloy 6063-T5 (min). ASTM B 221 (ASTM B 221 M) with minimum effective thickness of 0.60 inch (1.5 mm).
 1. Curbs: Minimum 1 1/2" wide field built or pre-fabricated curb (By Others)
- C. Plastic Sheets: Monolithic, formable, transparent (colorless – Clear) with good weather and impact resistant.
 1. Acrylic: ASTM D 4802, thermoformable, acrylic (methacrylate), Category C-2 or CC-2 Type UVA (formulated with ultraviolet absorber), with Finish 1 (smooth or polished), unless otherwise indicated. Average impact strength of 5.0 ft-lb/in_ when tested per ASTM D 256 (Charpy un-notched)
 2. Impact Modified Acrylic: ASTM D 4802, thermoformable, acrylic (methacrylate) impact modified sheets manufactured by the extrusion process, category C-2 or CC-2, type UVA (formulated with ultraviolet absorber) with Finish 1 (smooth or polished). Average impact strength of 0.75 ft-lb/inch (40 J/m of notch) when tested according to ASTM D 256, Test Method A (Izod).
- D. Thermal Break: Fabricate skylight units with thermal barrier separating interior metal framing from materials exposed to outside temperature.
- E. Shape and Size: As indicated by model number.
- F. Glazing: As indicated in Section 2.3
- G. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other non-corrosive metal as recommended by manufacturer.

- H. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil (0.4 mm) dry film thickness per coating.

2.3 PLASTIC SKYLIGHT UNITS

- A. General: Factory-assembled, curb-mounted unit consisting of plastic glazing, gasketing, inner frame designed to mount on separate curb.
 - 1. Products: Provide Model DDCSNT and DDSPNT meeting the requirements of this section.
- B. Curb: Minimum 1 1/2" wide field built or pre-fabricated (By Others).
- C. Condensation Control: Fabricate skylight units with integral internal gutters and weeps to collect and dispose of condensation.
- D. Thermal Break: Fabricate skylight units with thermal barrier separating interior metal framing from materials exposed to outside temperature.
- E. Shape and Size: As indicated by model number.
- F. Glazing: Outer dome or pyramid thermoformed acrylic (Clear) or Impact Modified Acrylic (Clear) with 25% rise.
- G. Glazing: Inner (horizontal) multi-wall translucent cellular polycarbonate panel filled with Nanogel® insulation.

2.4 FALL PROTECTION SAFETY SCREENS

- A. Provide Manufacturer's standard wire screen. Fasten screen to the extruded aluminum retainer assembly.

2.5 FABRICATION

- A. Framing Components: As follows:
 - 1. Factory fit and assemble 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. General: Comply with NAAMM "Metal Finishes Manual" recommendations for application and designations of finishes.
- B. Finish designations prefixed by AA conform to the system for designations of aluminum finishes established by the Aluminum Association.

- C. Mill Finish: Manufacturer's standard mill finish.
- D. Class I or Class II, Clear-Anodized Finish: AA-C22A41 (Chemical Finish: etched, medium matte; Anodic Coating: Class I Architectural, clear film thicker than 0.7 mil (0.02mm)) complying with AAMA 607.1. Class II Architectural 7.7 Mill.
- E. Class I, Color –Anodized Finish: AA-M12C22A42/A44 (Mechanical Finish: as fabricated, nonspecular: Chemical Finish: etched, medium matte; Anodic Coating: Class I Architectural, film thicker than 0.7 mil (0.02mm) with integral color or electrolytically deposited color) complying with AAMA 606.1 or AAMA 608.1.
 - 1. Color: Medium bronze.
- G. Bronze Baked Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment). Apply baked enamel complying with painting manufacturer's specifications for cleaning, conversion coating, and painting.

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 weather tight. 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 counter flashing). 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 plastic skylight units, inside and out, not more than 5 days prior to date of substantial completion.

END OF SECTION