

NOTE TO SPECIFIERS:

The purpose of this guide specification is to assist the specifier in developing a project specification for the use of Daystar Systems, LLC Natural Lighting System. It is not intended to be a “stand alone” document, nor to be copied directly into a project manual. This guide specification will need to be carefully reviewed and edited accordingly to comply with project specific requirements.

SECTION 08625 – NATURAL LIGHTING SYSTEM

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 SUMMARY

- A. This Section includes thermally efficient Natural Lighting System consisting of:
 - 1. Curb mounted acrylic glazed Roof Dome.
 - 2. [Metal] [Wood] roof curb.
 - 3. Reflective light shaft.
 - 4. Ceiling lens
- B. Related Sections include the following:
 - 1. Division 7 Section “Sheet Metal Flashing and Trim” for [flashing and] wrapping wood roof curb.

1.3 REFERENCES

- A. Roof Dome:
 - 1. I.C.B.O. ES Evaluation Report ER-1084.
 - 2. I.C.B.O. ES Evaluation Report ER-1990.
 - 3. I.C.B.O. ES Evaluation Report ER-4063.
 - 4. Architectural Testing Report # 02-414 83.01.

1.4 SUBMITTALS

- A. Product Data: Include material descriptions, dimensions of components, and finishes.
- B. Shop Drawings: Include plans, sections, details, and attachments to other Work.

1.5 QUALITY ASSURANCE

- A. Fire-Test Response Characteristics of Plastic Glazing: Provide plastic glazing sheets identical to those tested for fire-exposure behavior per test method indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
1. Self-Ignition Temperature: 650 deg F (343 deg C) or greater for plastic sheets in thickness indicated when tested per ASTM D 1929.
 2. Smoke Production Characteristics: Comply with either requirement below:
 - a. Smoke-Developed Index: 450 or less when tested per ASTM E 84 on plastic sheets in manner indicated for use.
 - b. Smoke Density: 75 or less when tested per ASTM D 2843 on plastic sheets in thickness indicated for use.
 3. Relative-Burning Characteristics: Tested per ASTM D 635.
 - a. Acrylic Glazing: Class CC2, burning rate of 2.5 inches (64 mm) per minute or less for nominal thickness of 0.060 inch (1.5 mm) or thickness indicated for use.

1.6 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer warranties the natural lighting system against defects in materials or workmanship within specified warranty period.
1. Warranty Period: There is a 20-year warranty on the top dome., a 25-year warranty on the light shaft reflective surface, and a one-year warranty for all other parts.
 2. Warranty: Manufacturer's standard form in which manufacturer warranties the following components of the natural lighting system against defects in materials and as noted within specified warranty period.
 3. Roof Dome: Warranty Period: There is a 20-year warranty on the top dome.
 4. Light Shaft Reflective Surface: Not to darken or break down when exposed to sunlight. Warranty Period: 25 years from Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Manufacturer:
1. Daystar Systems, LLC
14226 Hwy 4
Campbell Hill, IL 62916
Voice: 866-7-DAYSTAR or 618-426-1868

Fax: 618-426-1888

B. Products: Provide the following:

1. DayStar Natural Lighting System.

2.2 NATURAL LIGHTING SYSTEM

A. General: Components include roof dome, [**metal curb**], [**wood curb**], light shaft, and ceiling lens.

1. Unit Shape and Size, Nominal Dimensions: [**Square, 24-by-24-inch (600-by-600-mm)**] [**Square, 48-by-48-inch (1200-by-1200-mm)**] [**Rectangular, 24-by-48-inch (600-by-1200-mm)**].

B. Roof Dome: Factory-assembled curb mount sealed unit that includes glazing, extruded-aluminum glazing retainer, gaskets, and thermally efficient inner reinforced vinyl frame.

1. Aluminum Components:

- a. Extruded aluminum alloy 6063-T5 complying with ASTM B 209 (ASTM B 209M).
- b. Mitered tig welded joints.
- c. Finish: Mill finish.
- d. Thickness: 0.062"

2. Vinyl Components:

- a. Extruded PVC with joints fusion welded.
- b. Thickness: 0.090".

3. Acrylic Glazing:

a. Double-Glazing Profile: Dome.

- 1) Outer Glazing: Colorless, transparent one-piece molded acrylic. Thickness: 0.125".
- 2) Inner Glazing: Colorless, transparent, one-piece molded prismatic acrylic. Thickness: 0.118".
- 3) U-value: 0.44/0.70 SHGC (48" x 48" unit).

4. Condensation Control: Sealed unit with integral internal condensation gutter.

5. Thermal Separation: Interior vinyl frame that separates interior from metal framing materials exposed to outside temperature.

6. Glazing Gaskets: Manufacturer's standard silicone sealant.

C. Metal Curb: Self-flashing, 18 gauge [**galvalume**] [**powder coat, _____**], steel with continuously welded seams and built-in cricket water diverter.

1. Standard Height: 8 inches (200 mm) on ridge side.

2. Height, membrane or built up roofs with no slope: **[8 inches (200 mm)] [12 inches (300 mm)] [15 inches (380 mm)]**.
 3. Insulation: Manufacturer's standard rigid. R-value: R-7.5.
 4. Rib Caps: One piece molded rib caps to conform to specified metal roof rib.
- D. Wood Curb: 1 ½" thick, four piece wood curb with predilled holes for field assembly.
1. Height: 8 inches (200 mm) on ridge side.
 2. Insulation: Manufacturer's standard rigid. R-value: R-5.
 3. Flashing: Manufacturer's preformed aluminum flashing kit.
- E. Light shaft: ¾" thick laminated panel.
1. Length: **[24 inches (600 mm)] [32 inches (800 mm)] [48 inches (1200 mm)] [72 inches (1800 mm)] [96 inches (2400 mm)] [120 inches (3000 mm)] [144 inches (3600 mm)]**.
 2. Core: Manufacturer's standard 2 lb. density rigid foam panel. R-value: R-3.
 3. Reflective Surface: 0.020" thick aluminum mirror with 95% reflectance.
 4. Corners: 0.062" thick extruded RPVC. Color: white.
 5. Outer skin: 0.011" thick painted aluminum panel laminated to core. Color: Manufacturer's standard white. Flame spread index, ASTM E 84: 5. Smoke developed index, ASTM E 84: 35.
- F. Ceiling Lens: Full spectrum acrylic lens.
1. Lens: 0.200" thick **[molded 8" deep pan design,] [flat lens design,]** colorless, transparent, prismatic lens.
 2. Frame: 0.110" thick extruded aluminum alloy 6063-T5 with welded corners. Outer flange to include factory installed sealant tape to seal frame to light shaft. Finish: Manufacturer's standard white powder coating.

2.3 INSTALLATION MATERIALS

- A. 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.
- B. Mastic Sealant: 100 percent solids, asbestos-free reinforced butyl triple bead mastic sealant tape recommended by manufacturer.
- C. Silicone Sealant: ASTM C 920; one-part acetoxo cure adhesive sealant recommended by manufacturer.
- D. Foam Sealant: ¼" x ¾" closed cell 10 lb per cubic foot density vinyl foam tape recommended by manufacturer.
- E. Foil tape: 2mm thick high tack aluminum reflective foil tape, 2" wide recommended by manufacturer.

2.4 FABRICATION

- A. Roof Curbs: Fabricate for roof pitch indicated on drawings.
 - 1. Shop prime welded seams of metal roof curbs after fabrication.
- B. Ceiling Lens: Factory seal lens to frame.

PART 3 - EXECUTION

3.1 GENERAL

- A. Coordinate natural lighting unit 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.

3.2 INSTALLATION

- A. Install roof curb according to manufacturer's written instructions.
- B. Install rib caps to curb and roof according to manufacturer's written instructions. Seal with mastic sealant.
- C. Wrap wood roof curb with coil stock specified in Division 7 "Sheet Metal Flashing and Trim". Install in accordance with manufacturer's written instructions.
- D. Measure the required light shaft panel length in accordance with the manufacturer's written instructions and cut light shaft panel. Assemble and install light shaft according to manufacturer's written instructions. Remove protective film from light shaft panels. Apply reflective foil tape sealing top of light shaft panel to roof curb. Apply foam gasket over reflective foil tape according to manufacturer's written instructions.
- E. Install roof dome according to manufacturer's written instructions. Immediately remove protective film after installation.
- F. Clean light shaft panels and ceiling lens to remove dust and debris prior to installing ceiling lens. Take precautions not to scratch surfaces.
- G. Install ceiling lens according to manufacturer's written instructions. Ensure sealing tape seats properly to seal shaft and ceiling lens.

3.3 CLEANING

- 1. Clean all exposed surfaces with mild detergent. Take precautions not to scratch surfaces.

END OF SECTION 08625