

# ICC-ES Evaluation Report

## ESR-1761

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**DIVISION: 08 00 00—OPENINGS**  
**Section: 08 62 00—Unit Skylights**

### REPORT HOLDER:

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### EVALUATION SUBJECT:

### ELITE SOLAR SYSTEMS TUBULAR SKYLIGHTS

#### 1.0 EVALUATION SCOPE

##### Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)
- 1997 *Uniform Building Code*™ (UBC)

##### Properties evaluated:

- Structural
- Water resistance
- Durability

#### 2.0 USES

The Elite Solar Systems Tubular Skylights described in this report are plastic glazed skylights that comply with Sections 2405 and 2610 of the IBC, Section R308.6 of the IRC, and Sections 2409 and 2603 of the UBC.

#### 3.0 DESCRIPTION

The Elite Solar Systems Tubular Skylights are produced in 10-, 13-, 18-, 21- and 24-inch nominal diameters (part numbers 10ETS, 13ETS, 18ETS, 21ETS, 24ETS, respectively). The components include a dome, dome ring, aluminum self-flashing curb, reflective light tube, ceiling trim ring, light diffuser, and decorative ring. The domes are made of 0.220-inch-thick (5.59 mm) acrylic plastic. The acrylic plastic is Plaskolite, Inc., Duraplex, which has a CC2 classification and is recognized in evaluation report [ESR-2590](#). The light tubes are from 1 to 20 feet (305 to 6096 mm) long. At the ceiling level, an aluminum ring accepts the light tube. The light diffuser consists of either two or three lenses, with one or two lenses being 0.06 inch (1.524 mm) thick and one lens being 0.125 inch thick (3.175 mm). The lenses, made of acrylic plastic,

recognized in [ESR-2728](#), terminate the lower end of the light tube and are held in place with a powder-coated aluminum ring.

#### 4.0 INSTALLATION

##### 4.1 General:

Elite Solar Systems Tubular Skylights are packaged in shipping cartons for field installation. The cartons contain instructions, components, and attachments, including templates for roof and ceiling holes. During the installation, framing members must not be cut. Installation for various roof conditions includes the following:

- On sloped roofs in accordance with Section 2610.3 of the IBC or Section 2603.7.1 of the UBC, the hole for the skylight must be 14<sup>1</sup>/<sub>2</sub>, 18<sup>1</sup>/<sub>2</sub>, or 22 inches (368, 470 or 559 mm) in diameter, corresponding, respectively, to the 10-, 13- and 18-inch-diameter skylights. (The 21- and 24-inch-diameter skylights are not used on sloped roofs.) On sloped roofs with existing roof covering, a 4-inch (102 mm) slit is made parallel to the ridge. Nails and staples are cut underneath the underlayment toward the ridge, flashing is slid under the shingles, and the underlayment is centered with the hole.
- On low sloped roofs (2:12), the hole for the skylight must be 11, 14, 19, 22 or 25 inches (279, 356, 483, 559, or 635 mm) in diameter, corresponding, respectively, to the 10-, 13-, 18-, 21- and 24-inch-diameter skylights.

With the bottom side of the flashing over roof tiles or shingles [on low sloped roofs, two or more 1/2-inch-diameter (12 mm) concentric beads of supplied caulking are applied on the underside of the flashing], the base of the skylight is attached to the roof sheathing. For 10-, 13- and 18-inch-diameter skylights, attachment is with fourteen No. 8 by 2-inch-long (50.8 mm), self-drilling, stainless steel screws. For 21- and 24-inch-diameter skylights, attachment is with sixteen of the same type of screw. The exposed screw heads must be caulked and the loose shingles secured. The dust seal provided is applied to the inside top part of the flashing. On the ceiling level, a 10<sup>1</sup>/<sub>2</sub>-, 13<sup>1</sup>/<sub>2</sub>-, 18<sup>1</sup>/<sub>2</sub>-, 21<sup>1</sup>/<sub>2</sub>-, or 24<sup>1</sup>/<sub>2</sub>-inch-diameter (267, 343, 470, 546, or 622 mm) hole is cut into the ceiling board for, respectively, the 10-, 13-, 18-, 21-, and 24-inch-diameter units. The trim ring is secured to the ceiling board with three or four No. 8 by 1<sup>1</sup>/<sub>2</sub>-inch-long (38 mm) sheet metal screws installed in the flat nuts. The length of the light tube must be determined by measuring from the top of the base flashing to the bottom side of the trim ring. The light tube must be flush to the trim ring and fastened with three No. 8 by 1<sup>1</sup>/<sub>2</sub>-inch-long (13 mm), self-drilling, stainless steel screws. The light tube may be trimmed using tin snips

and must be installed flush with the top of the 0.060-inch-thick (1.58 mm) aluminum flashing, which provides support for the dome.

The 10-, 13-, and 18-inch-diameter domes are attached to the vertical section of the self-flashing curb with four No. 8 by  $\frac{3}{8}$ -inch-long (9.5 mm), self-drilling, stainless steel screws. The 21- and 24-inch-diameter domes are attached to the curb with six of the same type of screw. Gaps in roof shingles and around the base flashing must be sealed with the caulking materials provided. A decorative ring with a light diffuser is installed on the ceiling by aligning standoffs with the keyholes, and twisting to fit.

#### 4.2 Concrete Tile Roof:

Holes must be made in the roof deck following procedures as described in Section 4.1. Several roof tiles are removed around and beyond the opening, and must be reinstalled after the skylight is in place. Two or more  $\frac{1}{2}$ -inch-diameter (12.7 mm) concentric beads of supplied roof caulking are applied to the underside of the flashing. Roof tiles are then replaced at the bottom part of the flashing. An aluminum sheet with an EPDM skirt must be installed over the flashing, and the roof tiles to be reinstalled on top of the EPDM skirt are cut to fit around the flashing as needed, and formed to fit the profile of the tile. Caulk supplied or specified in the installation instructions must be applied between tiles and the skirt to seal the gap. Installation at the ceiling level follows procedures as described in Section 4.1.

#### 4.3 Allowable Loads:

When installed in accordance with this report, the tubular skylights are capable of resisting positive and negative loads of up to 20 psf (0.96 kN/m<sup>2</sup>), when attached to minimum  $\frac{3}{4}$ -inch-thick (19.1 mm) plywood complying with the applicable code, or to framing, with minimum 1-inch (25.4 mm) penetration.

### 5.0 CONDITIONS OF USE

The Elite Solar Systems Tubular Skylights described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must be in accordance with the manufacturer's published installation instructions, this report, and Sections 2405 and 2610.3 of the IBC, Section 308.6 of the IRC, or Sections 2409 and 2603.7.1 of the UBC, as applicable. In the event of conflict between this report and the manufacturer's published installation instructions, this report governs.
- 5.2 The maximum positive and negative loads are as noted in Section 4.3 of this report.
- 5.3 The use of the skylights as components of fire-resistance-rated assemblies is outside the scope of this report.
- 5.4 The skylights are produced in Chandler, Arizona, under a quality control program with inspections by the National Accreditation and Management Institute, Inc. (AA-728).

### 6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Plastic Skylights (AC16), dated February 2008 (editorially revised April 2008).

### 7.0 IDENTIFICATION

Elite Solar Systems Tubular Skylight components are packaged in boxes bearing the manufacturer's name (Elite Solar Systems, Inc.) and address, the model number or size of the unit, the CC2 plastic classification, the production date, the name of the inspection agency (National Accreditation and Management Institute, Inc.) and the evaluation report number (ESR-1761). Additionally, a label bearing the name of the product (Elite Solar Systems Tubular Skylight,) the model number or size of the unit, and a safety warning must be attached to the vertical portion of the flashing. The safety warning must address risk of fall in compliance with Class I, ANSI Standard Z35.1, specifications.

ITEM	PART DESCRIPTION
1	Dome Assembly
2	No. 8 x 3/8" Dome Stainless Steel Pan Head Screws
3	Weather Seals
4	Flashing (Seamless Aluminum)
5	No. 8 x 2" Flashing Stainless Steel Tek Screws
6	Light Tubes (2-24" Tubes)
7	Aluminum Foil Tape
8	No. 8 x 1/2" Light Tube Stainless Steel Tek Screws
9	Flat Nuts
10	Trim Ring
11	No. 8 x 1 1/2" Trim Ring Phil Flat HD SMS
12	Double Glaze Light Diffuser
13	Ceiling Deco-Ring

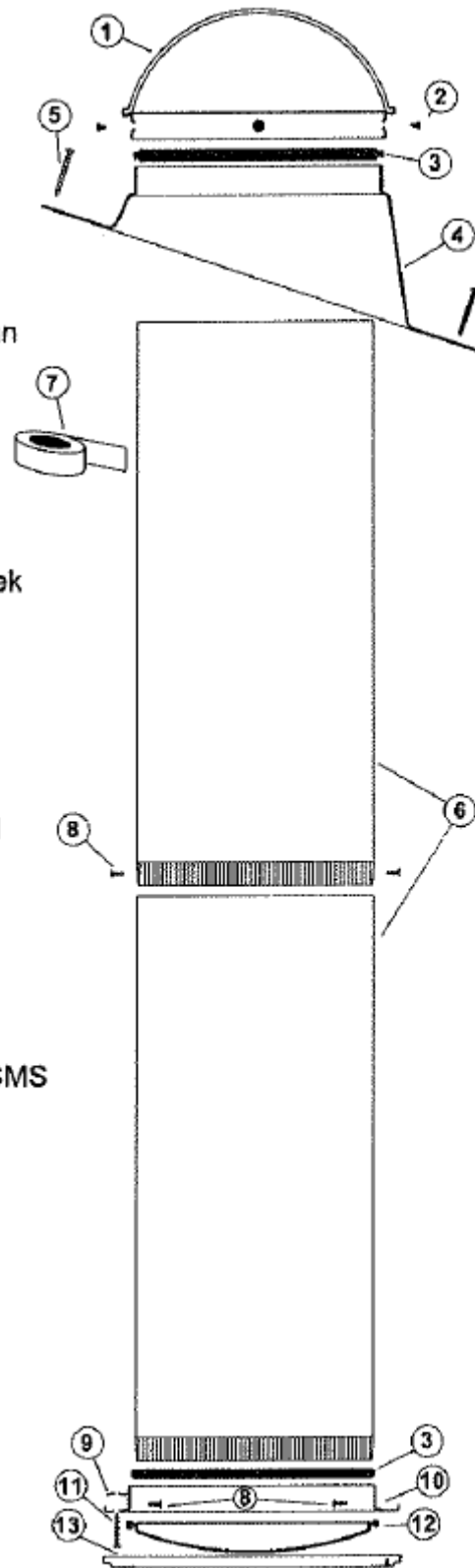


FIGURE 1—TUBULAR SKYLIGHTS ASSEMBLY AND PART IDENTIFICATION