



ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office # 5360 Workman Mill Road, Whittier, California 90601 # (562) 699-0543
Regional Office # 900 Montclair Road, Suite A, Birmingham, Alabama 35213 # (205) 599-9800
Regional Office # 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 # (708) 799-2305

Legacy report on the 1997 Uniform Building Code™ and the BOCA® National Building Code/1999

DIVISION: 08—DOORS AND WINDOWS
Section: 08620—Unit Skylights

SOLATUBE SKYLIGHTS

SOLATUBE INTERNATIONAL, INC.
2210 OAKRIDGE WAY
VISTA, CALIFORNIA 92083

1.0 SUBJECT

SOLATUBE Skylights.

2.0 DESCRIPTION

2.1 General:

The components of the SOLATUBE skylights include a dome, a reflector, a support base, reflective tubing, a dome ring, a ceiling ring or transition box and a light diffuser. The 10-, 14- and 16-inch-diameter (254, 356 and 406 mm) SOLATUBE skylight domes are made of CC1 Lexan 143-R111 polycarbonate plastic recognized in evaluation report ER-3286, or CC2 Plexiglas DR acrylic plastic recognized in evaluation report ER-1084. The 21-inch-diameter (533 mm) skylights are made of CC2 Plexiglas DR acrylic plastics recognized in ER-1084. See Figure 1. The dome is 0.125 inch (3.2 mm) thick for the 10-, 14- and 16-inch (254, 356 and 406 mm) units, and 0.143 inch (3.63 mm) thick for the 21-inch (533 mm) unit. Support for the dome is provided by a 0.125-inch-thick (3.2 mm) polypropylene, or 0.063-inch-thick (1.6 mm) aluminum, or 0.028-inch-thick (0.71 mm) galvanized or aluminized steel base. See Table 1. The 10-, 14- and 16-inch-diameter (254, 356 and 406 mm) domes are attached to the vertical section of the base (turret) using four stainless steel or dechromated-finish steel screws. The 21-inch-diameter (533 mm) dome is attached to the vertical section of the base (turret) using six stainless steel or dechromated-finish steel screws. Optional turret extensions are available for skylight applications requiring greater turret heights. An aluminum tube is attached under the dome to the interior of the base. The tube is 0.020 inch (0.508 mm) thick and is constructed of polished aluminum sheet. The tube lengths are from 0.3 foot to 21 feet (91 mm to 6401 mm). At the ceiling level, a ceiling ring (for 10-, 12- or 14-inch units) or square-to-round transition box (for 21-inch unit) made of CC2 polypropylene, PVC or ABS plastic accepts the tubing. A light diffuser, of either 0.100-inch-thick (2.54 mm) CC2 Plexiglas DR acrylic plastic or 0.030-inch-thick (0.76 mm) CC2 Bayer Makrolon #2407 polycarbonate plastic, terminates the lower end of the

tube. When installed in accordance with this report, the 10-, 14- and 16-inch-diameter (254, 356 and 406 mm) skylights can resist positive and negative loads of up to 100 psf (4.79 kPa), and the 21-inch-diameter (533 mm) skylight can resist positive and negative loads of up to 35 psf (1.67 kPa).

2.2 Installation:

2.2.1 General: The SOLATUBE skylights are prepackaged for field installation, with all components, attachments, and instructions in the shipping carton. A 10.5-, 14.5-, 16.5- or 22-inch-diameter (267, 368, 419 or 559 mm) hole, for the 10-, 14-, 16- or 21-inch-diameter (254, 356, 406 or 533 mm) skylight, respectively, is cut in the roof sheathing and ceiling below the attic space. The skylight base is attached to the roof sheathing using eight No. 10 by 2-inch (51 mm) stainless steel sheet metal screws for the 10-, 14-, and 16-inch (254, 356, 406 mm) units, and ten screws for the 21-inch (533 mm) units. A pile weather seal is adhered to the top edge of the skylight base. The reflective top tube with attached dome ring is then inserted into the skylight base opening. A curved reflector is mounted inside the dome. The dome is secured to the base using four No. 8 by 9/16-inch (14 mm) stainless steel or dechromated-finish steel panhead sheet metal screws for the 10-, 14- and 16-inch (254, 356 and 406 mm) units, and six No. 8 by 1-inch (25.4 mm) screws for the 21-inch (533 mm) units. The 10-, 14- and 16-inch (254, 356, and 406 mm) units terminate at the ceiling into the ceiling ring installed using either four No. 10 by 1.5-inch (38 mm) steel screws or four plastic self-locking anchors. See Figure 2. The 21-inch (533 mm) unit terminates at the ceiling into a square-to-round plastic transition box set into the framework on a suspended T-bar ceiling system, or is installed into a gypsum ceiling using four No. 10 by 1.5-inch (38 mm) steel screws. The 10-, 14- and 16-inch (254, 356 and 419 mm) light diffusers are secured onto the polypropylene ceiling ring by means of a one-eighth clockwise turn or by means of four plastic diffuser clips. The 21-inch (533 mm) units are secured onto the square-to-round transition box by means of diffuser clips or, for the 21-inch (533 mm) open ceiling light diffuser, by means of four plastic diffuser clips.

The lowest edge of the base turret opening must be at least 4 inches (102 mm) above the plane of the roof. This may be accomplished with installation of the optional SOLATUBE 2-inch (51 mm) polypropylene or galvanized or aluminized-steel turret extension. See Figure 3. The 4-inch (102 mm) clearance requirement and the turret extension are not required on roofs of Group R, Division 3, occupancy with a minimum slope of 3:12 (25%).

\*Revised July 1, 2003

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Where a Class A, B or C roof covering is required, the entire turret and dome edge of the 10-inch (254 mm) skylight with a polypropylene base must be protected by a SOLATUBE 0.030-inch-thick (0.76 mm) galvanized or aluminized steel turret shroud, as illustrated in Figure 4. With the exception of the 21-inch (533 mm) unit with 8-inch-high (203 mm) flashing, the skylights with an aluminum or steel base must be protected with the application of dome-edge protective rings, made of 0.040-inch-thick (1.02 mm) galvanized or aluminized steel, as shown in Figure 5.

**2.2.2 Tile Roofs:** For installation on a tile roof, either a “dead-soft” 0.020-inch-thick (0.51 mm) pleated aluminum sheet or a single-ply roofing membrane recognized in a current ICC-ES evaluation report is used as malleable fire-protection flashing. After the appropriately sized hole for the 10-, 14- or 16-inch (254, 356 or 406 mm) SOLATUBE skylight is cut in the roof sheathing, a metal base flashing is placed over the hole and secured in place using eight No. 10 by 2-inch (51 mm) stainless steel or decentered-finished screws. See Figure 6. Tiles surrounding the flashing are cut according to the profile of the flashing with a maximum clearance of 1/2 inch (12.7 mm) from the flashing. The pleated aluminum sheet or single-ply membrane, with a circular hole cut in the center to match the flashing, is placed over the flashing. A turret extension ring of 0.030-inch-thick (0.76 mm) galvanized- or aluminized-steel is placed over the opening of the base flashing, sandwiching the aluminum or single-ply membrane between the flashing and turret extension ring. If single-ply membrane is used, nonshrink grout is poured along the base of the turret extension ring to fill the gap between the cut tiles and the flashing. The sheet or membrane is then secured to the top of the tiles in the course below using non-alkaline tile mastic for pleated aluminum sheets or butyl rubber tape, 2 inches (51 mm) wide for single-ply membranes. The remaining sheet or membrane is tucked under the tiles in the upper course.

When installing the system with high profile tiles, the upper and side edges of the pleated aluminum are bent up to form a “bird stop” and water seal under the upper course tiles. If a single-ply membrane is used, the gap between the turret extension ring and the tiles in the upper course must be filled with additional grout, to create a water seal.

### 2.3 Identification:

SOLATUBE skylight components are packaged in boxes bearing the name and address of the manufacturer, and the evaluation report number (ER-5057). Additionally, a label bearing the name SOLATUBE is attached to the base of the skylights. The dome, ceiling ring, and diffuser have the words “US Patent No. 5099622” inscribed on their surfaces. The 21-inch-diameter (533 mm) skylight has a safety label applied to each unit, warning of risk of fall.

### 3.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Interim Criteria for Plastic Skylights (AC16), dated April 1997.

### 4.0 FINDINGS

**That the SOLATUBE Skylights described in this report comply with the 1997 Uniform Building Code™ (UBC) and the BOCA® National Building Code/1999 (NBC), subject to the following conditions:**

- 4.1 Installation is in accordance with this report, Section 2603.7 of the UBC, or Section 2608 of the NBC, as applicable, and the manufacturer’s instructions.**
- 4.2 The maximum positive and negative load is 100 psf (4.79 kPa) for the 10-, 14- and 16-inch-diameter (254, 356 and 406 mm) skylights, and 35 psf (1.67 kPa) for the 21-inch-diameter (533 mm) skylight.**

**This report is subject to re-examination in two years.**

**TABLE 1—SOLATUBE SKYLIGHT MATERIAL COMPONENT AVAILABILITY**

COMPONENTS	10-INCH	14-INCH	16-INCH	21-INCH
Dome—DR 101 acrylic, 0.125 inch thick	X	X	X	X
Dome—Lexan 143-R111 polycarbonate, 0.125 inch thick	X	X	X	
Base—Polypropylene, 0.125 inch thick	X			
Base—Aluminum, 0.063 inch thick	X	X	X	X
Base—Galvanized or aluminized steel, 0.030 inch thick	X	X		X
Turret Extension—Polypropylene (0.125 inch thick) or metal (0.032 inch thick)	X			
Turret Shroud—Galvanized or aluminized steel, 0.040 inch thick	X			
Square-to-round transition—Polypropylene, PVC or ABS plastic (0.060 inch thick)				X
Tile roof kit (pleated aluminum sheet)	X	X		
Tile roof kit (single-ply membrane)	X	X	X	

For SI: 1 inch = 25.4 mm.

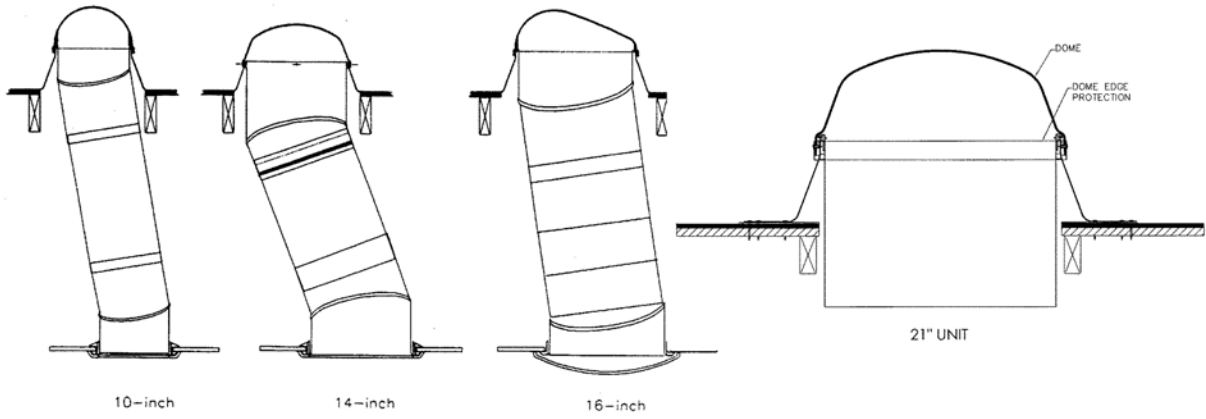


FIGURE 1—SOLATUBE 10-, 14-, 16- AND 21-INCH UNITS

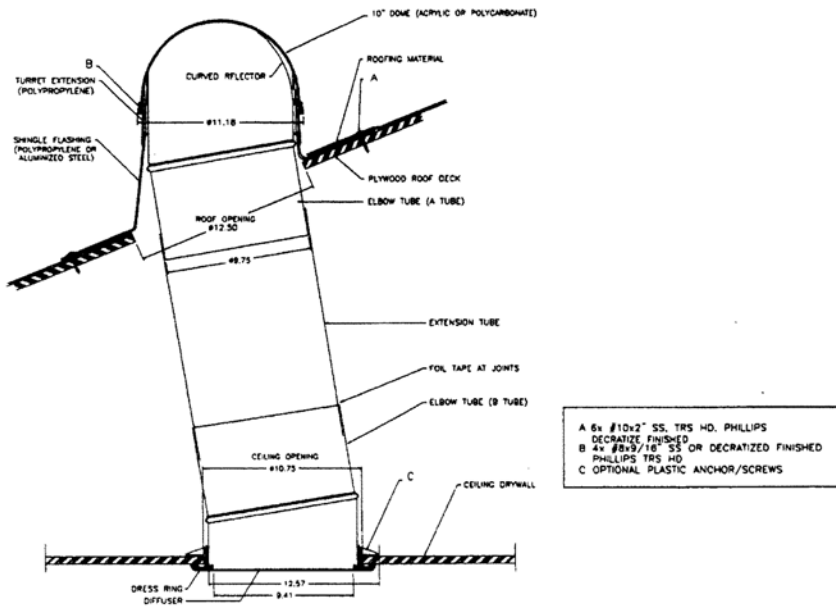


FIGURE 2—DETAILED DESCRIPTION OF 10-INCH SOLATUBE

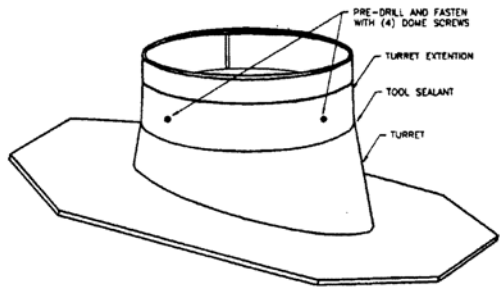


FIGURE 3—TURRET EXTENSION

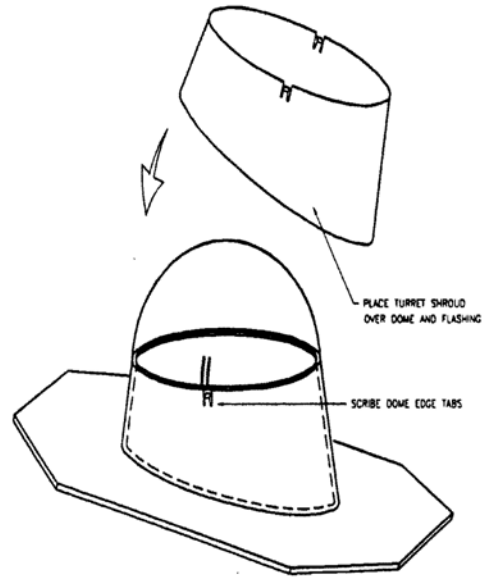
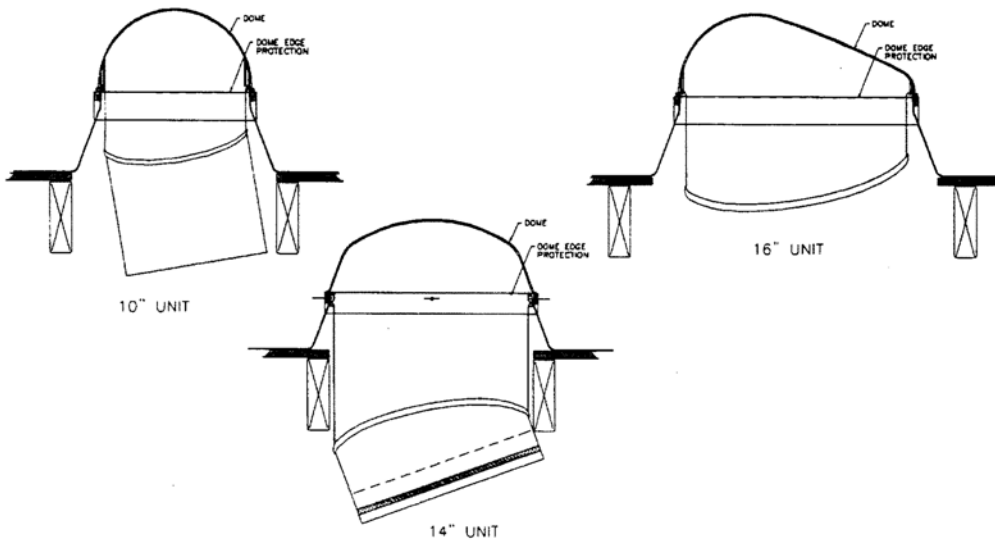
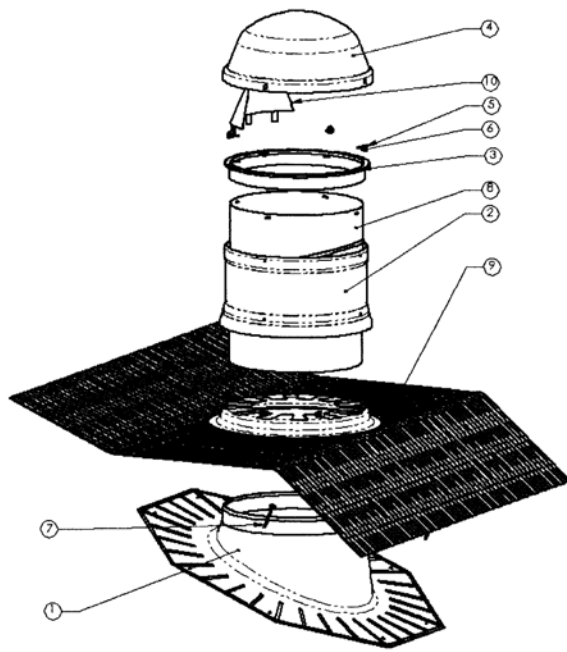


FIGURE 4—TURRET EXTENSION AND TURRET SHROUD



For SI: 1 inch = 25.4 mm.

FIGURE 5—10-, 14- AND 16-INCH SOLATUBE DOME RING



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	BASE FLASHING	STEEL, PITCHED
2	1	TURRET EXTENSION	STEEL, FOR TILE
3	1	DOMES RING	PLASTIC
4	1	DOMES	PLASTIC
5	4	SPACER	PLASTIC
6	1/2	#8 SELF PIERCE SCREW	STEEL, DACROTIZED
7	8	#10 SM SCREW	STEEL, DACROTIZED
8	1	TUBE, TOP ANGLE ADAPTER	ALUMINUM
9	1	FLASHING, MALABLE	ALUMINUM PLEATED SHEET
10	1	L.I.T.D. (REFLECTOR)	ALUMINUM

FIGURE 6—TILE ROOF INSTALLATION PROCEDURE

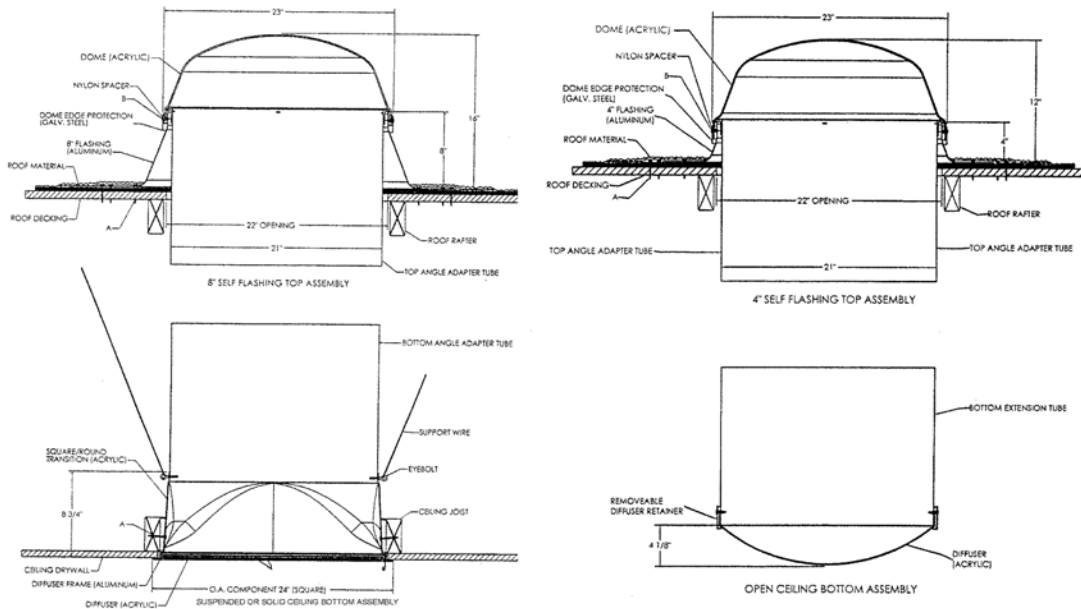


FIGURE 7—TYPICAL INSTALLATION OF 21-INCH UNIT (INCLUDING DOME RING)